THE IRON AGE

New York, Thursday, April 21, 1910.

THE NATIONAL METAL TRADES ASSOCIATION.

Proceedings of the Twelfth Annual Meeting, New York, April 13 and 14.

Progressive Policies Discussed—New Officers Elected.

The twelfth annual convention of the National Metal Trades Association was brought to a close, as far as the official programme was concerned, at noon on Thursday, April 14, the business affairs of the organization having been transacted so expeditiously as to allow for the elimination of the session set for Thursday afternoon. Some of the papers which were to have been read Thursday afternoon were presented earlier, and the routine business of the organization was transacted more quickly than had been expected, so that the programme of the convention was in a measure rearranged.

It was the best attended meeting ever held by the association. A notable feature was the absence of discussions on defense subjects, for, although the National Metal Trades Association was organized originally for defensive purposes, the organization has gradually been going further afield, and industrial education, premium systems and employees' welfare received prominent attention.

The only allusion of any moment to the question of combating unfair exactions of labor, aside from the commissioner's report, was contained in the banquet programme on Wednesday night over the initials of Howard P. Eells, the retiring president. This sentiment, which had the indorsement of the meeting, was as follows: "Labor unions have done much for the cause of labor and are here to stay. Our aim is to demonstrate that the chief contentions for which they stand—the closed shop, the boycott, the minimum wage scale, an eight-hour day, limitation of apprentices, opposition to piece work and to the premium plan and similar profit sharing systems—are against the true interests both of the employer and of the workman."

WEDNESDAY MORNING SESSION.

The session of Wednesday morning included the hearing of the president's and commissioner's reports, extracts from which were given in *The Iron Age* of April 14, and the appointment of the following convention committees:

Credentials: J. B. Derby, Manning, Maxwell & Moore, New York City; Chas. A. Haney, Sloan & Chase Mfg. Company, Ltd., Newark, N. J.; C. E. Whitney, Whitney Mfg. Company,, Hartford, Conn.

Resolutions: Henry D. Sharpe, Brown & Sharpe Mfg. Company, Providence, R. I.; Geo. F. Brooks, Harrington & Richardson Arms Company, Worcester, Mass.; E. W. Heyl, Heyl & Patterson Company, Pittsburgh, Pa.; J. C. Hobart, Triumph Electric Company, Cincinnati, Ohio; F. C. Breakspear, A. G. Spalding & Bros. Mfg. Company, Chicopee, Mass.

Constitution: P. Weber, Edison Phonograph Company, West Orange, N. J.; Robert D. Gould, Bath Grinder Company, Fitchburg, Mass.; F. F. Fosdick, Fitchburg Steam Engine Company, Fitchburg, Mass.

Auditing: F. C. Caldwell, H. W. Caldwell & Son Company, Chicago, Ill.; Robert H. Jeffrey, Jeffrey Mfg. Company, Columbus, Ohio; F. Farrel, Jr., Farrel Foundry & Machine Company, Ansonia, Conn.

Convention: E. H. Hargrave, Cincinnati Tool Company, Cincinnati, Ohio; Winslow Blanchard, Blanchard Machine Company, Cambridge, Mass.; N. W. Dingwall, Chicago Drop Forge & Foundry Company, Chicago, Ill.

The committees proceeded to their work at once and the convention found time before the morning session was over to listen to a paper on "Cincinnati's Continuation School," by Dr. Frank B. Dyer, Superintendent of Schools of Cincinnati, Ohio.

WEDNESDAY AFTERNOON SESSION.

On Wednesday afternoon the reports of the standing committees were read and accepted. The report of the joint committee of the National Metal Trades Association and the National Founders' Association was not given, as there had been no recent meeting of the committee. The Committee on Resolutions presented the following:

Whereas, Several of the local branches have in their constitutions made provision for associate members; and

Whereas, It has been suggested that a general provision for membership in the National Association might be advantageous, be it

Resolved, That the question of associate membership both for the National Association and the local branches be referred to the Administrative Council.

Resolved, That the Committee on Industrial Education of the National Metal Trades Association be authorized and directed to respond to the existing public demand for information upon the subject of industrial education as follows:

That said committee be authorized and directed to collect and collate the work done by the National Metal Trades Association in its various branches in this important field and publish the same in pamphlet form in such a number as it may deem proper for the use and information of the organization and its members.

That said committee shall publish each year an additional compilation of such work, the expense incident thereto being borne by the National Metal Trades Association.

That such publication shall be carried out under the supervision of the Administrative Council.

These resolutions were adopted later.

William Lodge, chairman of the Committee on Industrial Education, offered a report reviewing the work of the Winona Technical Institute at Indianapolis, Ind., to the support of which the National Metal Trades Association contributes. Herbert H. Rice of the Waverly Company, Indianapolis, and others discussed the report, the finances of the institute and the recent appointment of a receiver to look after its affairs. It was stated that the readjustment of the affairs of the institute does not mean that a policy of complete reconstruction has been deemed necessary, but that the school will continue along its established lines and will be known in the future as the National Trades School.

A resolution was passed recommending that the Administrative Council consider the question of employing some person or persons competent to present the work of the association in public addresses. As one speaker put it, it would benefit the association to have competent speakers go about the country doing missionary work for the organization, mention being made particularly of the desirability of presenting the aims and methods of the association before the student bodies of various colleges. In this way those who are to go out from these institutions would know of the broad views of manufacturers on labor questions and of the work they are doing for industrial education.

EMPLOYERS' LIABILITY.

The subject of employers' liability received conspicuous attention. A paper was read on "Employers'

Liability Insurance" by Miles Dawson, New York, which was followed by an interesting discussion. One speaker said that manufacturers in Ohio had been compelled to oppose an unfair liability bill introduced in the Ohio Legislature, and alluding to the fact that the National Association of Manufacturers had been collecting data with a view to combating such unfair legislation, he suggested that the National Metal Trades Association should work along similar lines and should put the matter in the hands of a committee.

Cornelius Bermingham of the Canadian Locomotive Company, Ltd., Kingston, Ont., said that the question of employers' liability is receiving more and more attention from the public and that members should consider the humane side of the question. He added: "There are many cases where accidents in shops bring about much privation among the families of men who are killed or maimed. If we do not suggest some plan of relief and act on it, the public will do so and the whole burden will be put on the employers. We should devise some plan of employers' liability adjustment which will be equitable to all, instead of having one framed up upon us as a labor proposition." Another speaker said that this subject, when taken up by politicians, generally resulted in unfair measures against manufacturers.

During the afternoon Prof. Herman Schneider of the University of Cincinnati, Ohio, spoke on "The Growth of the Co-operating System," and a paper on "Insurance Against Unemployment," by John L. Griffiths, American Consul-General at London, which had been forwarded, was read by the secretary. This latter paper reviewed an experimental British plan which is to be presented to Parliament.

THURSDAY MORNING SESSION.

Some papers which had been arranged for Thursday's session were omitted, notably one by Fred A. Geier of the Cincinnati Milling Machine Company. Mr. Geier was unable to attend the meeting because of a slight illness. Other papers presented were on "Modern Methods of Shop Management," by Frederick A. Waldron, New York, "Premium Systems," by Carl G. Barth, Philadelphia, "Cincinnati's Continuation School," by J. Howard Renshaw, instructor. Discussions were dispensed with.

ELECTION OF OFFICERS.

The Nominating Committee, through its chairman, W. D. Sayle of the Cleveland Punch & Shear Works Company, Cleveland, expressed regret because of the declination of H. W. Hoyt of the Great Lakes Engineering Works, Detroit, Mich., second vice-president, and William Lodge, treasurer, to perform further official services. The committee then presented the following nominations, all of which were acted upon favorably:

President, J. H. Schwacke, William Sellers & Co., Inc., Philadelphia, Pa.; first vice-president, F. C. Caldwell, H. W. Caldwell & Son Company, Chicago; second vice-president, Paul B. Kendig, Seneca Falls Mfg. Company, Seneca Falls, N. Y.; treasurer, Howard P. Eells, Bucyrus Company, Cleveland, Ohio. Councillors for two years: George Mesta, Mesta Machine Company, Pittsburgh, Pa.; Edwin E. Bartlett, Boston, Mass.; F. K. Knowlton, F. K. Knowlton Company, Rochester, N. Y.; M. K. Bowman, Griscom-Spencer Company, New York; Herbert H. Rice, Waverly Company, Indianapolis, Ind., and W. A. Layman, Wagner Electric Mfg. Company, St. Louis, Mo. W. H. Van Dervoort, Root and VanDervoort Engineering Company, East Moline, Ill., was elected to fill the unexpired term of F. C. Caldwell, who was advanced to the office of first vice-president.

M. H. Barker of the American Tool & Machine Company, Boston, Mass., was made an honorary member of the Administrative Council.

Felicitous addresses were made by the retiring officers. The new officers and councillors were presented and made speeches expressing their appreciation of the honor accorded them.

The chairman appointed a new Nominating Committee, composed of Mr. Barker, Mr. Eells and F. K. Copeland of the Sullivan Machinery Company, Chicago.

The Administrative Council was in session most of Thursday afternoon considering various matters affecting the organization. Robert Wuest was reappointed commissioner and complimentary references were made to his work during the year, while he was also extolled for the admirable arrangements made for the convention.

The annual banquet took place on Wednesday night at the Hotel Astor. Mr. Eells presided and interesting addresses were made by W. C. Brown, president of the New York Central Lines; Myron T. Herrick, formerly Governor of Ohio; William E. Humphrey, member of Congress from the State of Washington, and Prof. Dexter S. Kimball of the Department of Machinery and Construction, Cornell University, Ithaca, N. Y.

Panama Canal Progress.

According to the *Canal Record*, Ancon, Canal Zone, April 6, if the original plan adopted by Congress had been adhered to, the excavation for the Panama Canal would have been completed by this time. That plan provided for a total excavation of 103,795,000 cu. yd. Changes in the plan made subsequently by order of the President, added 70,871,594 cu. yd., bringing the total to be excavated up to 174,666,594 yd. The estimate of time required for the construction of the canal as originally planned was nine years.

The grand total of excavation accomplished down to the end of March, 1910, is 103,205,666 cu. yd., or within 590,004 yd. of the total required for the canal as originally planned. As the average daily output exceeds 100,000 cu. yd., the full excavation required by the original plan has since been accomplished.

Active excavation work on a large scale did not begin till 1907, and in that year 15,765,290 cu. yd. were removed. In 1908, 37,116,735 yd. were removed, and in 1909, 35,096,166, making the total for the two years 72,212,901, a monthly average for the entire period of over 3,000,000 yd. The total excavation of 1904, 1905 and 1906 was not quite 7,000,000 yd., so that nearly the entire excavation called for under the original plan has been accomplished in three and a quarter years. The excavation remaining to be accomplished is the 70,871,594 yd. made necessary by the changes in the plan.

The grand total of canal excavation in March was 3,067,479 yd., 476,750 yd. more than the total for February, although the rainfall in March was the heaviest since work was begun by the Americans, and at the principal points along the line of the canal exceeded the average for all the years of record. The dry excavation amounted to 2,178,618 yd. and was principally by steam shovels. The dredges removed 888,861 yd. in addition to the amount pumped into Gatun Dam by suction dredges.

The record excavation for a single steam shovel, working eight hours a day for one month, was made by shovel No. 213, which removed 70,290 cu. yd., place measurement. The highest record for a single day was made by the same shovel, 4823 cu. yd., place measurement, in a day of eight hours.

The Pennsylvania Railroad April 13 operated the first electric train through the tunnels under Manhattan Island and East River. The train, made up of six construction cars and an electric locomotive, ran from the station in New York to the Thompson avenue viaduct in Sunnyside Yard, Long Island City.

The Sturtevant Electric Forge Blower.

The electric forge blower shown in the accompanying illustrations consists of a pressure fan of the multivane type, inclosed in a pressed steel plate casing and driven by a direct-connected electric motor designed to operate from electric lighting circuits. Fig. 1 shows the exterior of the blower, Fig. 2 the multivane construction, and Fig. 3 the use of the blower in connection with forges.

The features claimed for the set are compactness and high efficiency, due, to a large extent, to the multivane type of wheel, which, it is claimed, is used for the first time in this class of equipment. The contention is that even in large shops forges would be operated fully as economically by equipping each with one of these units as by blowing all the fires through piping from one large fan. The principle of the individual drive is argued in favor of this plan, the loss of friction in the pipe being comparable to that of idle running shafting, belting and pulleys in the shop.

Fig. 1.—Exterior of the Electric Forge Blower Built by the B. F. Sturtevant Company, Hyde Park, Mass.

According to the builder the individual blower connected to a forge with a tuyere area of 1.5 sq. in. will bring a 2-in. round soft steel bar to a welding heat in 4 min., and a 1-in. round soft steel bar in 2½ min. The apparatus is also applicable in connection with blowpipes, for soldering tubes or other uses of a like nature. The blowers can be set on a bench or shelf or on a box or the floor near the forge with pipe run to the tuyere or bracketed to the forge, discharging directly into the tuyere. The casing is easily adjusted to place the discharge opening in any direction. The set complete weighs 35 lb. and measures 14½ in. from the floor to the top of the fan case, and 10 in. from the inlet of the fan to the outside end of the motor shaft.

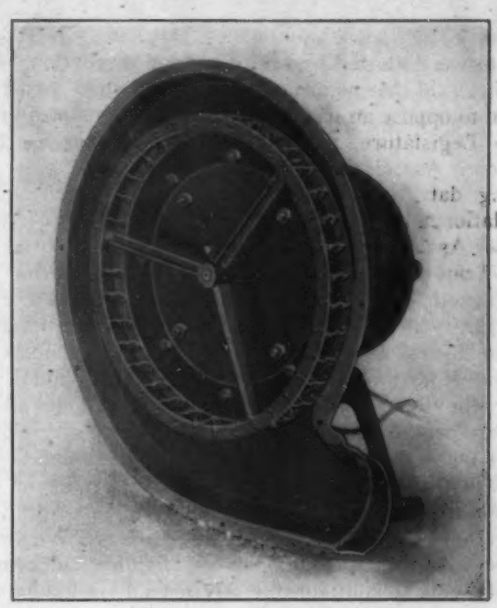


Fig. 2.—Interior View of the Blower, Showing the Multivane Construction.

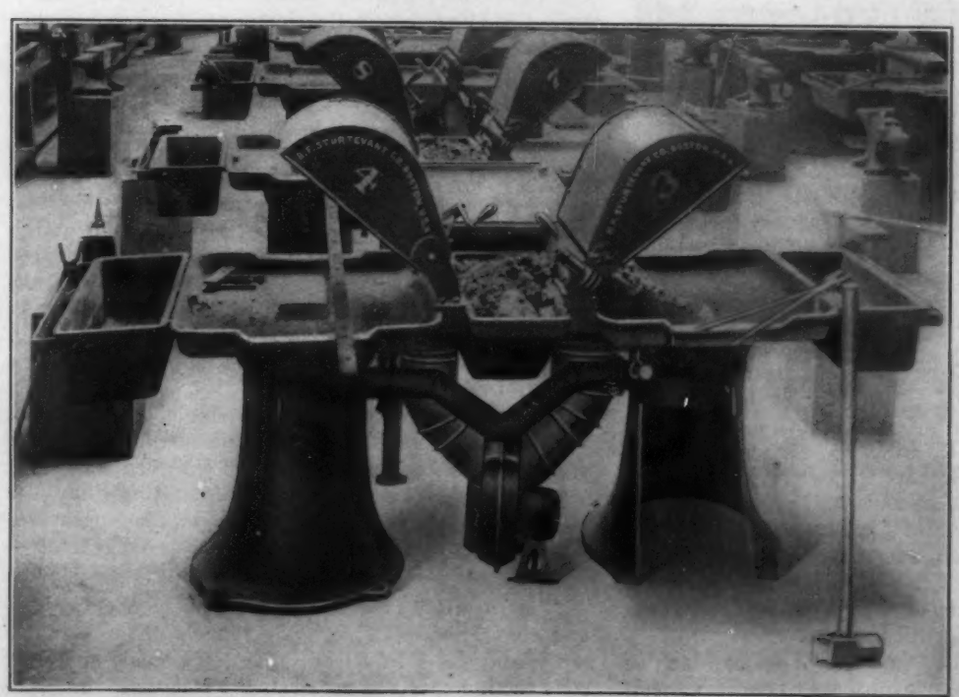


Fig. 3.—The New Electric Forge Blower Installed to Supply Air to Forges.

The Eagle Company, 98 Warren street, Newark, N. J., was incorporated March 18, to engage in a general manufacturing business. The chief lines of manufacture at this time will be Eagle gasoline marine and stationary engines in 13 models and a full line of automobile wind shields. Other lines will be added later. The company will occupy the premises formerly used by the Domestic Sewing Machine Company in Newark. The officers of the Eagle Company are as follows: Bryant S. Keefer, president; George Badenoch, secretary and treasurer.

A contract has been let by the American Steel & Wire Company to the Westinghouse interests for the electrical equipment for the new wire plant to be built near Wylam, Ala., in the Birmingham district. All the large and small motors required in the plant are included. Gas engines using blast furnace gas at Ensley will drive the electric generators.

EMPLOYERS' LIABILITY INSURANCE.*

Good Results from the German System—How Employers' Associations in the United States May Improve Upon Present Methods.

BY MILES M. DAWSON.

As at present supplied in the United States, employers' liability insurance consists of an insurance company undertaking for a consideration, called a premium, to assume the liability of the employer to his employees who are injured by reason of what the law terms negligence, and to the next of kin of employees who lose their lives through his negligence. In practice it consists in the insurance company making it a business to drive as hard a bargain as it can in the settlement of claims of this nature or to resist such demands and defend against them in the courts if necessary, according as one course or the other may seem less expensive or for any other good business reason more desirable.

The Present Insurance Plan Unsatisfactory.

This system has not proved satisfactory to any of the parties in interest. It is not satisfactory to employers, because, while it appeals to them as a ready means of escaping annoyance and occasional excessive verdicts, it involves the payment of large amounts which go for agency, adjustment, home office and other expenses, and which must be paid by the employers in addition to the sums that actually reach the injured employees and the next of kin of employees who are killed. It is unsatisfactory to the companies because they find that there is constant pressure upon them to be more liberal in their settlements since the employer is not directly affected by each settlement, and at the same time equally constant pressure upon them to furnish the insurance at lower premiums. They also tire of being continually in the courts or continually resisting the payment of claims, and competition among them is resulting in several of the companies choosing to make prompt settlement in as many instances as they can, instead of standing upon their rights under their contracts and under the liability law. It is not satisfactory to the workmen and their next of kin because they are confronted with a purely business proposition at a time when there may be very great need, and when, under the old conditions, the employer might, and very likely would, as a matter of sympathy, contribute to their relief, even though not liable under the strict letter of the law. Another objection on their part is that litigation is more expensive to them, longer drawn out, more bitterly fought and the defense conducted by men of special skill in such matters. They also urge that often advantage is taken of their necessities to drive a specially hard bargain without their being made aware of their rights in the matter.

There is also a fourth party to the transaction—the public. Whatever employers or employees fail to do for the relief of the victims of industry falls upon the public in the most unfortunate form of charity or even, eventually, by reason of the impoverishment of families and the consequent failure to educate and train children, through courts and prisons.

The New Efficiency of German Workmen.

A very prominent manufacturer of Germany, after a recent visit to the United States, made substantially this statement: "I was here once before, some 15 years ago. At that time I felt that German manufacturers had much to learn from America, and particularly about the management of their factories. Now I do not find that there is much to learn, while I know that American manufacturers have very much to learn from us." No more than 25 years ago German workmen were not regarded as efficient, either from the standpoint of quantity or quality of product, as the workmen of several other countries, and particularly Great Britain and the United States; but precisely the contrary is now pretty generally acknowledged to be the case. It will interest my hearers, I am sure, to know that when I was abroad in 1908 to study employers' liability and employers' liability insurance, as well as other schemes for insuring workmen, I found that the superior efficiency of German workmen, on the whole, was very largely ascribed by everybody to the system of employers' liability insurance which had been introduced in Germany.

Under the system which obtained there before, and which was about the same as in this country at present, the life of the workmen in many occupations was a gamble, in which the fate of their wives and children and of others who might be dependent upon them was at stake. They saw the severest misfortunes come to families, amounting to complete demoralization, without any fault on the part of the man himself. At the present time precisely the contrary condition exists—viz., that the only way in which those dependent upon the workman can be involved in absolutely disastrous misfortune is for him to become an idler and fall out of the ranks of regularly employed wage earners. If he is a steady workman and if any misfortune comes to him, a sufficient financial support to keep him and his family from the poorhouse or from depending upon public or private charity is assured. The effect of this upon his character is said to have been nothing short of marvelous. Other results likewise are pointed to, namely: that by reason of the new conditions there is very little expensive litigation; that the cost of getting a dollar to the insured workman or the family of a workman who is killed is about 10 or 12 cents, instead of at least another dollar, as in our own country; that the burden on the manufacturers is evenly and uniformly distributed, and that excessive verdicts are not merely transferred from the shoulders of the individual manufacturer to the entire trade, but also do not exist at all.

Features of the German System.

The general impression in the United States is that Germany has a system of State insurance, where the State collects premiums from the employers, administers the funds, pays the claims and in general manages the whole affair. The fact is precisely the contrary. The system is one under which the trades themselves are organized into mutual trade associations such as your own, to which every person or company engaged in that trade is by law required to belong and which are managed by their own members. The liability to employees is transferred from the individual employer to these trade associations, and the amount of liability is absolutely fixed by law and is likewise entirely independent of questions of negligence, so that there is no quarrel over whether the employer is liable or not. The only difference of opinion that arises is when there is partial disability, the degree of which has to be determined. While these associations are conducted at an expense of about 10 or 12 per cent., it is generally conceded that their effectiveness, both in the shrewd and careful management of their business and also in bringing about the adoption of safety devices and a reduction in the hazards of industry, far exceeds

* From an address before the National Metal Trades Association, New York convention, April 14, 1910.

that of any system which has ever been introduced in any other country.

Under the German system the amount of liability in event of total disablement is fixed at a certain proportion of the wages and is payable like wages—that is, by weekly payments. In the event of partial disability an amount proportionate to the impairment of the earning power is paid. In the event of death a pension is paid to the widow during her widowhood—that is, until her death or remarriage—and a pension to each child until he reaches 16 years. These pensions in the aggregate must not exceed the amount that the man would have received himself had he been totally disabled. This system I personally regard as the most satisfactory one for employers' liability insurance that can be found in any country. It could be introduced here, precisely as it is in Germany, only by means of legislation. If there were such legislation, as our national Constitution now stands, it would apply only to individual States and would take effect in those States only when adopted by their respective legislatures.

Workmen's Collective Policy.

The further questions remain, What can be done under our existing laws by the voluntary act of individual employers or trade associations of employers and what method of insurance is wisest for them? Employers' liability insurance in its usual form, as a mere means of escaping liability, is perhaps as satisfactory as any other method now open to employers. Its disadvantages are obvious, as already stated.

There are but four other methods available. One of these is a workmen's collective policy, issued by an employers' liability insurance company for protection of workmen, without regard to liability, the employer contributing toward the premium and either thereby becoming entitled to be protected against his liability or else paying a somewhat reduced premium for protection against such liability. Theoretically this kind of insurance is much more desirable from many standpoints than employers' liability insurance alone, but in practice it has not found favor.

Employers' Compensation Policy.

The most recent form of insurance of this general nature is known as "employers' compensation policy," under which the employer is authorized to compensate his employees for injuries sustained, without regard to liability, to the amount of one full year's wages for the loss of two limbs or the sight of both eyes, of one-half that sum for the loss of one limb, of one-third the sum for the loss of sight of one eye, and the amount of a fixed compensation as set forth in a list of the same for minor injuries. There is also compensation for temporary disability to the amount of one-half the weekly wages or salary, for a limited period only, and compensation to the next of kin in event of the death of the employee to the amount of one full year's wages. This sort of insurance also provides for defending the company in event of suit or for adjusting or compromising the same; in other words, protects the employer against his liability. Whether the cost of insurance is to be paid entirely by the employer or part by him and part by his employees, both contributing thereto, the company leaves open to the employer.

Insurance with Sickness and Accident Benefits.

The third method is a system of insurance, paid for by monthly premiums and furnishing sick benefits as well as accident benefits, the employees either contributing the whole or the employer making such contributions as he may desire. Under these policies usually no arrangement is made to relieve the employer from liability, except that in many cases no claim is made, in view of the fact that the employee has been taken care of by the insurance. Of course where the employer contributes it would be possible in some cases to get an agreement with the employees, relieving him in whole or in part from his liability, unless the law or declared public policy of a State should be found to be against so-called "contracting out."

Mutual Insurance Fund.

The fourth method is by a mutual insurance fund created by and among the employees and supported by their contributions, either assisted by contributions on the part of the employer or entirely independent of such contributions. Under this system, if liberal contributions are made by the employer, it is common for him either to have an agreement in advance that he shall not be held liable under the law and that the benefits provided by the funds shall be accepted in lieu of the indemnity for which he might be held liable at law, or else that a receipt and release to that effect must be given before any portion of the benefits provided by the insurance fund can be drawn. This latter is deemed the wiser course, both because it is more nearly certain to be sustained in all cases by the courts and also because it does not frighten away the employees and cannot reasonably be criticised as in any to be against so-called "contracting out."

The Preferable Voluntary System.

It cannot be said that any of these systems is, except in rare cases, at all to be compared with the system in use in Germany. The difficulty with each of the first three is that the benefits are not large for the contributions made. Relatively large expenses are unavoidable. There must be solicitation by agents, usually not only of the employers but also of the employees. There must be collection expenses to be paid by commissions or otherwise; there must be adjustment from some central office—with the sole exception of the new "employers' compensation policy," which provides for direct settlement of claims—and there must be litigation which is costly on both sides. None of these three approaches the fourth, or mutual, method either in economy or in avoiding litigation. Under mutual schemes to which employees contribute, and especially if employers also contribute, there is usually a reasonably complete provision made for the maintenance of the disabled employee and his family; and, since this provision is immediately available, there is usually no question raised as to accepting it and going forward without calling in the lawyers or the courts. The expenses should rarely, if ever, exceed 10 per cent. of the amount paid out in benefits; whereas it is not probable that any of the others can be operated at an expense of less than from one-third to one-half of the total amount paid—in other words, from 50 cents to $1 for each dollar of benefit.

It is interesting, likewise, to observe that schemes of this general nature, which in Great Britain are known as establishment funds, were introduced in all European countries successfully before there was any change in the employers' liability laws, and that the best of these establishment fund schemes were preserved after the laws went into force and are recognized to be on the whole more beneficial than the plans set up by law. Thus, even in Germany, the establishment fund scheme, which was already in operation in the great Krupp works, has been continued and is regarded as more beneficial and more satisfactory on the whole than even the perfected plans introduced by the Government, and in mining and railroad transportation similar conditions, extending through the entire trade, had been previously created and fostered by legislation, which have also proved more satisfactory than the general plans introduced by the Government.

How Employers Could Co-operate.

There would be obvious advantages if the members of the Metal Trades Association could and would combine to cover their liability and to provide for their injured workmen and the families of workmen who are killed, through their mutual trades association or

a subsidiary association connected with it; and if this were established upon a sound insurance and actuarial basis, unquestionably a larger measure of relief to the injured and the families of the dead could be given without an increase in expenditure. Indeed, the benefit would be increased nearly, if not quite, 50 per cent. as compared with the cost of employers' liability insurance. Yet these benefits could be paid without an increase of cost to the manufacturers, by permitting and encouraging or, best of all, requiring employees to contribute in order both that larger benefits might be paid, and also that all sicknesses and disabilities might be covered without regard to negligence, and also without regard to whether they are incurred while the workmen are at work or when they are off the work.

There is nothing Utopian or altruistic in such a proposition. It has been thoroughly proved to be a businesslike thing to do, resulting in great economies directly and indirectly, and also in creating a body of unusually efficient, reliable and steady workmen. Such a system confined, however, to one large employer of labor, a traction company, was introduced some 10 years ago under the guidance of Senator Aldrich, Marsden J. Perry, C. S. Sweetland and others in Providence, R. I. Its operation without a hitch or interference at a minimum of expense and trouble, and with the best possible results both in the alleviation of distress and in the economy of expenditure, is sufficient evidence of what can be done upon a larger scale, and especially by means of the co-operation of employers.

The United States Steel Corporation's Relief Plan.

Generous Provision for Injured Employees and for the Families of Those Killed in Works Accidents.

Since December, 1908, officers of the United States Steel Corporation and subsidiary companies have been developing a plan for the relief of men injured and the families of men killed in works' accidents. Official announcement is made that a plan has now been adopted and will be put into operation at once. This is a purely voluntary provision for injured men and their families made by the companies without any contribution whatsoever from the men. In principle it is similar to the German and other foreign laws and to recommendations which have been made by the Employers' Liability commissions of New York and other States since the corporation's work upon this plan was begun.

Under the plan thus adopted relief will be paid for temporary disablement and for permanent injuries and for death. The relief is greater for married men than for single men and increases according to the number of children and length of service. During temporary disablement single men receive 35 per cent. of their wages and married men 50 per cent., with an additional 5 per cent. for each child under 16 and 2 per cent. for each year of service above 5 years. Following the provisions of all foreign laws and all legislation suggested in this country there is a period of 10 days before payment of relief begins. For permanent injuries lump sum payments are provided. These are based upon the extent to which each injury interferes with employment and upon the annual earnings of the men injured. In case men are killed in work accidents, their widows and children will receive one and one-half years' wages, with an additional 10 per cent. for each child under 16 and 3 per cent. for each year of service of the deceased above five.

For some years the subsidiary companies of the United States Steel Corporation have been making payments to men injured and families of men killed in practically all cases, without regard to legal liability. These payments have amounted to more than $1,000,000 a year; but it is believed that the plan now adopted will result in additional benefits. It should be understood that these payments are for relief and not as compensation. There can be no real compensation for permanent injuries, and the notion of compensation is necessarily based on legal liability, which is entirely disregarded in this plan, as all men are to receive the relief, even though there be no legal liability to pay them anything, which is the case in at least 75 per cent. of all works accidents.

Experience will perhaps lead to some modifications of this plan, but it will be in operation for one year from May 1, 1910, and if it meets with success and approval from the men and the public it is hoped that similar and possibly improved plans may be adopted in succeeding years.

It is the corporation's purpose by this plan to treat employees fairly and generously, even under the most enlightened view of an employer's responsibility.

The corporation also announces that for the period first above referred to there has been under consideration a plan for the payment of pensions to disabled or superannuated employees, and it is expected that this will soon be put into practical effect.

The International Harvester Company's Plan of Workmen's Compensation.

The International Harvester Company, whose profit sharing, benefit and pension systems were explained in an article published in *The Iron Age* of December 2, 1909, page 1704, has announced in the past week its plan for dealing with the problem of employers' liability and workmen's compensation for industrial accidents. It is of special interest at this time in view of the fact that in four of the States in which the company has plants—namely, Illinois, New York, Wisconsin and Minnesota—legislative commissions are engaged in investigating the subject of compensation for industrial accidents, with the expectation that legislative action will soon be taken.

The International Harvester Company plan also applies to these connected companies: The International Harvester Company of Canada, Ltd., the International Flax Twine Company, the Wisconsin Steel Company and the Wisconsin Lumber Company. Its purpose, as stated, is "to insure to employees at the works, the twine, steel and lumber mills and the mines prompt, definite and adequate compensation for injuries resulting from accidents occurring to them while engaged in the performance of their duties, and also to provide compensation to the relatives dependent upon any employee whose death results from such accident." The radical departure of this plan lies in the fact that the company casts aside the defenses of "contributory negligence," "assumed risk" and of the "fellow servant" doctrine, and proposes to pay, without regard to any question of its legal liability, a definite scale of compensation to all its employees who are injured as the result of accidents occurring while they are at work.

Three Years' Wages in Case of Death.

The scale of compensation provided is as follows:

In case of death within 16 weeks of the accident three years' average wages will be paid, but not less than $1500 nor more than $4000. In case of death between 16 weeks and 52 weeks after the accident, two years' average wages, but not more than $3000. If the employee leaves no widow, children or other relatives dependent upon him for support, then reasonable hospital and medical expenses and a further sum for burial expenses, not less than $75 nor more than $100.

In case of the loss of a hand or foot, one and one-half years' wages, but in no event less than $500 nor more than $2000.

For the loss of both hands or both feet, or one hand

and one foot, four years' wages, but in no event less than $2000.

For the loss of sight of one eye, three-fourths of the average yearly wages; for loss of sight of both eyes, four years' average wages, but not less than $2000.

In case of other injuries, one-fourth wages during the first 30 days of disability; if disability continues beyond 30 days, one-half wages during the continuance thereof, but not for more than two years from the date of the accident. Thereafter, if the total disability continues, a pension will be paid. The disability benefits are in no case to exceed $20 a week.

Employees' Contributions Increase Benefits.

Provision is made so that the employees may increase the benefits to be paid during the first 30 days of disability to an amount equal to half wages. This is accomplished by the creation of a benefit fund, to which employees earning $50 per month or less will contribute 6 cents a month; employees earning more than $50 and less than $100, 8 cents a month, and employees earning more than $100, 10 cents per month. These small contributions, together with the one-fourth wages paid by the company, will be sufficient to provide half pay for all injured employees during the first 30 days of disability.

This arrangement for contributions from the employees toward paying the benefits for the first few weeks of disability is modeled after the German law. As to the reason for desiring this contribution from the employees, this statement is made:

> The company earnestly desires the co-operation of its employees in the payment of benefits during the first 30 days of disability, because it wishes every employee to assist in the prevention of accidents. The company has expended large sums in safeguarding machinery and in the effort to protect its employees from injury, but without the active co-operation of the employees many accidents cannot be avoided. Under this plan the company and the employees equally divide the payment of benefits during the first 30 days of disability, and thus every employee becomes financially interested in guarding against accidents and in seeing that his fellow workmen are equally careful. It is hoped that this mutual interest will lead to active co-operation on the part of the employees, and that thereby accidents will be reduced to a minimum.

Legal Liability Not Abated.

Under this plan no employee loses any legal rights which he now has. He still retains the privilege of bringing a suit for damages against the company. The plan, however, does provide that if the employee shall decide to accept the benefits such acceptance shall have the effect of releasing the company from all further liability arising out of the accident for which the benefits were paid.

A comprehensive scheme for the administration of the plan is provided. A department known as the industrial accident department is created. This is to be managed by a board of managers composed of five members appointed by the company. Provision is also made for a staff of medical examiners whose duty it is to report upon all cases of injury.

A significant feature of the plan is the prohibition of the payment of benefits where the injury is due to the intoxication of the employee or to his failure to utilize the safety appliances provided by the company, or to gross and willful misconduct.

The Domestic Sewing Machine Company is transferring its machinery, stock, sewing machines and sewing machine business from Newark, N. J., to the Domestic Sewing Machine Company, Chicago, Ill., with large factories at Kankakee, Ill., where Domestic sewing machines will hereafter be manufactured. The main offices are located at 46, 48, 50 Jackson boulevard, Chicago, where all correspondence should hereafter be directed. The superintendent, Stephen A. Davis, with foremen and other skilled workmen, are to be transferred to the Kankakee factory.

Brazilian Iron Prospects.

Brazil Desires to Effect Commercial Exchange of Ore for Coal.

[COMMUNICATED.]

Gen. F. M. de Souza Aguiar, a High Commissioner sent by the Brazilian Government, is now in this country for the purpose of looking into the iron and steel industry. He has been visiting not only the great iron and steel plants of this country, but also of Europe, and it is understood that he has been trying to arrange for the commercial exchange of iron ore and coal. The Brazilian iron situation is somewhat peculiar, for while the country has vast areas of the highest grade ores, practically no coal has thus far been discovered.

The Great Extent of Brazilian Deposits.

According to the reports of Professor Brenner of Stanford University, who has made an exhaustive study of Brazilian metallic resources, the country has sufficient ore in sight to supply the steel industries of the world for centuries. Unfortunately, at present she is not in a position to smelt her ore, owing to the lack of coal, and any use that may be made of it will necessarily be by exportation of the raw material. There has been a high export duty on ore, and freight rates from the ore districts have been inordinately high, but Brazil has recognized the essential fact that a country's greatness—actual or potential—depends upon the extent to which she develops her natural resources. She has every requisite for a place in the concert of the nations, and she has ambitions of an industrial nature.

The Brazilian Congress is now considering the passage of a bill that will not only remove export duties and reduce internal freight rates, but will also guarantee dividends of 12 per cent. to capital engaging in the mining and shipment of iron ore. She knows that iron spells her future, and she wants to establish great structural steel plants, but she lacks the coal. So far every pound of coal she has burned, with the exception of a few tons of poor quality mined in Sao Paulo, has been brought from England, and at exorbitant cost. Brazil sees that while it might be well to ship ore, her greater and more permanent benefit is to be derived from having big plants on her own ground, and that if she can make some equitable arrangement that will exchange ore for coal she will be in a position to establish those plants; hence General Aguiar's visit.

The Location and Character of the Deposits.

The deposits are particularly rich in the States of Santa Catherina, Espirito Santo, Bahia, Matto Grosso, Goyaz, Minas Geraes and Rio Grande do Sul. In the State of Minas the ore is not found in beds, but in mountains, and most of the ores that come from that particular State run very high in metallic iron. Magnetite especially is found in Ipanema, and in Jacupiranguinha in the State of Sao Paulo, near Sabara, and Sao Miguel de Guanhaes in the State of Minas.

Itabirite, formed chiefly of oligiste (Fe_2O_3), is found in large quantities in Minas, Espirito Santo, Goyaz and Matto Grosso. The peak of Itabira do Campo is a solid mass of oligiste, and the mountain of Itabira do Matto Dentro is formed almost entirely of excellent oligiste.

In the interior, toward the Andes, hundreds of square miles lie yet unexplored, and will lie so for years to come, though the new Madeira-Mamore Railroad, that American capital is building, will open up to commerce a vast territory, with 4000 miles of rivers navigable for river steamers, contiguous to Bolivia.

The almost inexhaustible deposit continues through the Espinhaco Range for hundreds of kilometers. The Canunda Range, not far from Itabira do Matto Dentro, is a mountain of granular oligistes. The same is true of the mountains of Ouro et de Ferrugem, near the

city of Conceicao, and of those on the River Piracicaba at Sao Miguel de Piracicaba.

Conglomerate argillo-ferruginous rock (canga) which, in the State of Minas, covers leagues of ground, is 5 to 6 m. thick. According to expert geologists the canga of Gandarella alone will furnish 100,000,000 tons of iron.

Some analyses show high percentages in iron: Ore of Ipanema, sesquioxide of iron, 75 per cent., and magnetic oxide, 16 per cent.; ore of Sabara, metallic iron, 70.23 per cent.; itabirite of Itabira, sesquioxide, 92.79 per cent., and peroxide, 97.74 per cent.; canga of Gandarella, sesquioxide, 91.49 per cent.; ore of Lencoes Bahia, sesquioxide, 93.14 per cent.

One of the great advantages is that nearly all the ore deposits are within a comparatively short distance of tidewater, and while internal freights have been so high that it has cost approximately $10 to lay a ton of ore down in the European market, and from $12 to $14 to reach the American centers, the proposed action of the Government will reduce these figures materially.

Some Small Iron and Steel Plants.

It must not be imagined that Brazil is entirely without steel manufacturing plants. There are a few, but, compared with the vast enterprises in the United States, Germany and England, they are a negligible quantity. There are a few small works on the Piracicaba River at Sao Miguel de Piracicaba, as well as the Monlevade plant in the State of Minas Geraes.

Iron ore was first discovered in Brazil in 1554, at which time gold and silver were also found, but it was not until 1597 that any development work was done upon the deposits. As a matter of historical fact, there is evidence to prove that these workings were the first in minerals in the whole Western Hemisphere.

As a result of the failure thus far to discover coal of a commercial grade, the iron industry has been practically permitted to lie dormant. This does not mean, however, that Brazil has abandoned all hope of finding coal, for it must be remembered that an enormous portion of Brazilian territory lies unexplored. All geological indications point to the presence of coal in quantities and it seems to be only a question of time when it will be discovered.

Pending this, however, General Aguiar voices the need of his country, and if coal can be obtained in exchange for iron ore he will have rendered it a noteworthy service. The question of ocean transportation is not, as is often supposed, a troublesome one, for Brazil has already established a steamship line of her own between her principal ports and New York, in addition to four other lines which run upon regular schedules, and on all of these freight rates are lower than they are to Europe. Moreover, Brazil has no feeling against subsidies. Engineers who have recently returned from the country report that there is as great an opportunity in Brazil in iron and kindred metals, such as manganese, as there was some years ago in rubber, and that the concessions the Brazilian Government is willing to grant are such as to leave little to be desired.

The New Arcade Squeezer Molding Machine.

A Machine Developed for Use in the Builder's Foundry That Has Been Since Placed on the Market.

The machine shown in the accompanying illustrations is one which was originally developed by the Arcade Mfg. Company, Freeport, Ill., for use in its own foundry, and has been subsequently placed on the market. Fig. 1 shows the machine with the ramming head thrown back and the support for the flask exposed, while Fig. 2 illustrates the ramming position.

The machine was designed for the use of double-faced match-plates, one of which is shown standing on the shelf back of the machine. The snap flask on a suitable working table can be seen at the left. This table also supports a small supply of bottom-boards for making a number of molds. The gauge located in the rear of the machine serves to locate the flask under the ramming head accurately. In operation the flask is placed in the machine, with the pattern-plate between the cope and drag. Sand is then riddled and rammed into the top of the flask, the head is next swung forward and rammed by pulling down the lever at the left, which is partly hidden by the shelf.

When the head is thrown back this lever is out of the way, but as the head is swung forward the lever comes within easy reach of the operator's left hand and a short stroke serves to ram the mold, as shown in Fig. 2. The flask may then be rolled over, the cope filled and rammed in the same way, or, if desired, both cope and drag can be rammed at one operation by the use of suitable bottom and ramming-boards.

The ramming is accomplished by a double geared toggle device patented by the builder. During the first portion of the travel of the lever the head is thrown down very rapidly, but as it descends farther and the gears of the toggle approach a straight line, the descent is less rapid, while at the same time the leverage is greatly augmented, thus increasing the pressure brought to bear upon the mold. It is possible to ram the mold to any desired density by properly adjusting the hight of the ramming-board.

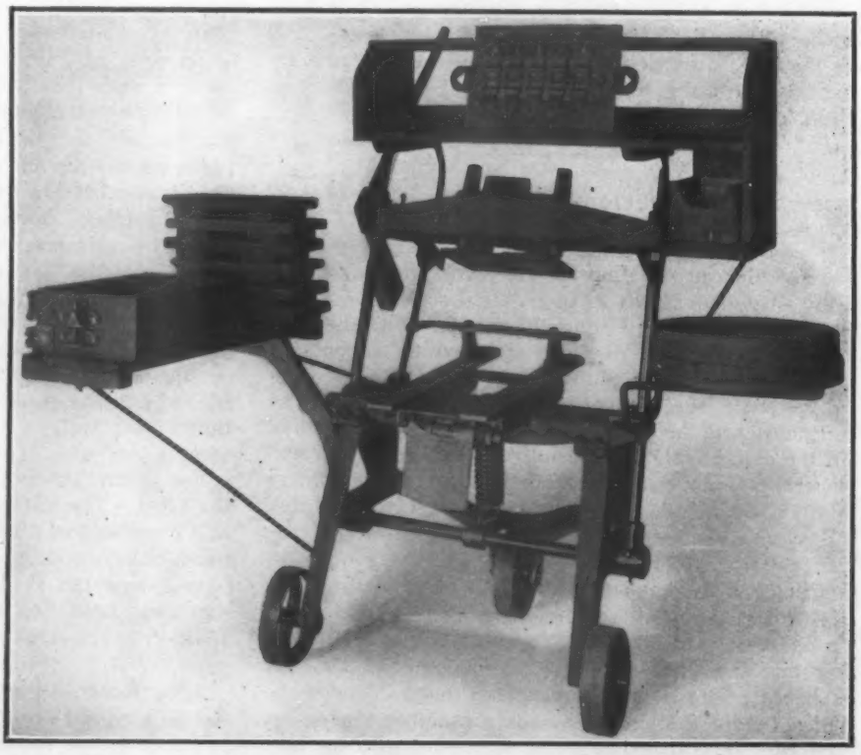


Fig. 1.—View of the New Arcade Squeezer, Built by the Arcade Mfg. Company, Freeport, Ill., Showing Head Thrown Back.

Fig. 2.—Ramming the Mold on the New Machine.

The machine is equipped with a vibrator operated by a knee-pad and the head is counterbalanced with a spring. A three-wheel mounting has been adopted for the machine, so that it will always rest upon the floor steadily. The little conveniences which have been supplied in the way of the flask shelf on the left, the riddle support on the right, locating the box for the parting sand above the riddle, and the tool shelf back of the machine will all be appreciated by its users. All of these features were worked out in their present arrangement during the practical use of the machine in the maker's foundry.

Consular Regulations of Foreign Countries.

The Bureau of Manufactures, Washington, D. C., has just issued, as No. 24 of its tariff series, the "Consular Regulations of Foreign Countries," with the rules to be observed and the fees charged to shippers of merchandise to such countries.

In some foreign countries there are few or no formalities to be observed in importing merchandise. In the case of others, especially in the Western Hemisphere, it is necessary to attend to several preliminary matters before the shipments leave the United States, to assure their entrance into the country to which they are exported. Thus, the invoice for the goods forwarded has to be taken before the Consul of the country of destination at the port of embarkation and sworn to as to its correctness. Some countries require in addition that the bills of lading be certified by their Consuls. The shipping manifests must likewise be taken before the Consul by the captain of the vessel, and must be certified to be in agreement with the bills of lading and invoices for the goods which the vessel is taking. The fees for the certification of these various documents differ widely, from nominal sums to very substantial charges, which in some cases add materially to the customs duties which have to be paid upon the goods at the port of their destination. Any attempt to avoid the payment of these charges is punishable by a heavy penalty, and frequently involves many delays and extreme annoyance to the merchants concerned.

Lack of attention to these requirements has resulted in many instances in a complete loss to American exporters of what was otherwise a promising foreign market, and the delay and financial loss involved have proved an injury generally to the reputation of American shippers.

This small sized book, giving the Consular regulations, contains also copies of invoices and bills of lading, with translations so as to make the matter clear even to a person who has never before attempted to export goods directly. Copies of this work can be obtained by merchants and manufacturers, free of cost, by application to the Bureau of Manufactures.

The Art of Making Tool Steel.

The Columbia Tool Steel Company, Chicago, with works at Chicago Heights, Ill., has issued an artistic 16-page brochure entitled "The Art of Making Tool Steel." The great care with which the higher qualities of tool steel are made to-day forms a large part of the subject matter of this booklet. The necessary reliance upon laboratory methods is set forth. The statement is made that from being originally a very simple proposition the manufacture of high-grade tool steel has become one of the most complex metallurgical problems known to science. "The up-to-date steel maker searches the entire world for material to make these complex alloy steels: manganese from Russia, silicon from France, chromium from Germany, tungsten from Colorado, Spain and Australia, vanadium from South America—in fact, no corner of the earth is overlooked, and the search for steelmaking materials is as thorough even as the search for gold." The processes pursued at the company's works are illustrated and described and the reader will be impressed by the narration of the skill of the workmen in turning out the several products. The Columbia Tool Steel Company is the pioneer in the manufacture of fine tool steel in the West. The statement is made that over 10,000 tons of Columbia tool steel has already been placed in the hands of American workmen. Branch warehouses have been established at Chicago, Milwaukee, Cincinnati and Cleveland, where large stocks are carried, in addition to the stock at the mill.

The Rogers-Brown Iron Company, Buffalo, N. Y., has let contract to the William Tod Company, Youngstown, Ohio, for three horizontal cross compound blowing engines to serve the two new blast furnaces which that company is constructing at South Buffalo.

Water Cooling Devices for Open Hearth Furnaces.

A Circulating System Installed at South Sharon, Pa.—Water Cooled Ports, Bulkheads, Uptakes and Doors.

The introduction of water cooling devices is an important feature of the new economies employed in the operation of open hearth furnaces in the past few years. What has been gained is not only the longer life of the expensive brickwork, which is subjected to the severest and most sustained attack of gases at the highest temperatures, but such continuity of operation as contributes materially to the reduction of unit costs. Various patents have been taken out on port, bulkhead, uptake and door cooling arrangements, and a complete circulating system for a water cooled open hearth furnace has been devised, from which excellent results have been obtained. The present description has to do with some of the patented devices introduced by the Keystone Furnace Construction Company, Pittsburgh, this company controlling the patents granted to Luther L. Knox and Montgomery Murray of Pittsburgh and that of Frank D. Carney and Thomas T. McEntee of Steelton, Pa.

In Fig. 1 the general arrangement is shown of a Knox water cooled open hearth furnace installed at the South Sharon, Pa., steel works of the Carnegie Steel Company. The main view in the cut is of the front or charging side of the furnace, showing doors, door frames, piping, &c. At the left is a view of the bulkhead or end of the furnace, showing the water cooled bulkhead, the end of the port cooling device and all the piping necessary to keep this cool. In the top plan of the circulating system the piping is shown connected up with all the water cooling devices—namely, those for ports, bulkheads, division wall, front uptake crosspiece, door frame and door. From each of these there is a separate return to the reservoir or circulating tank, supported over the top of the furnace buckstays, being in

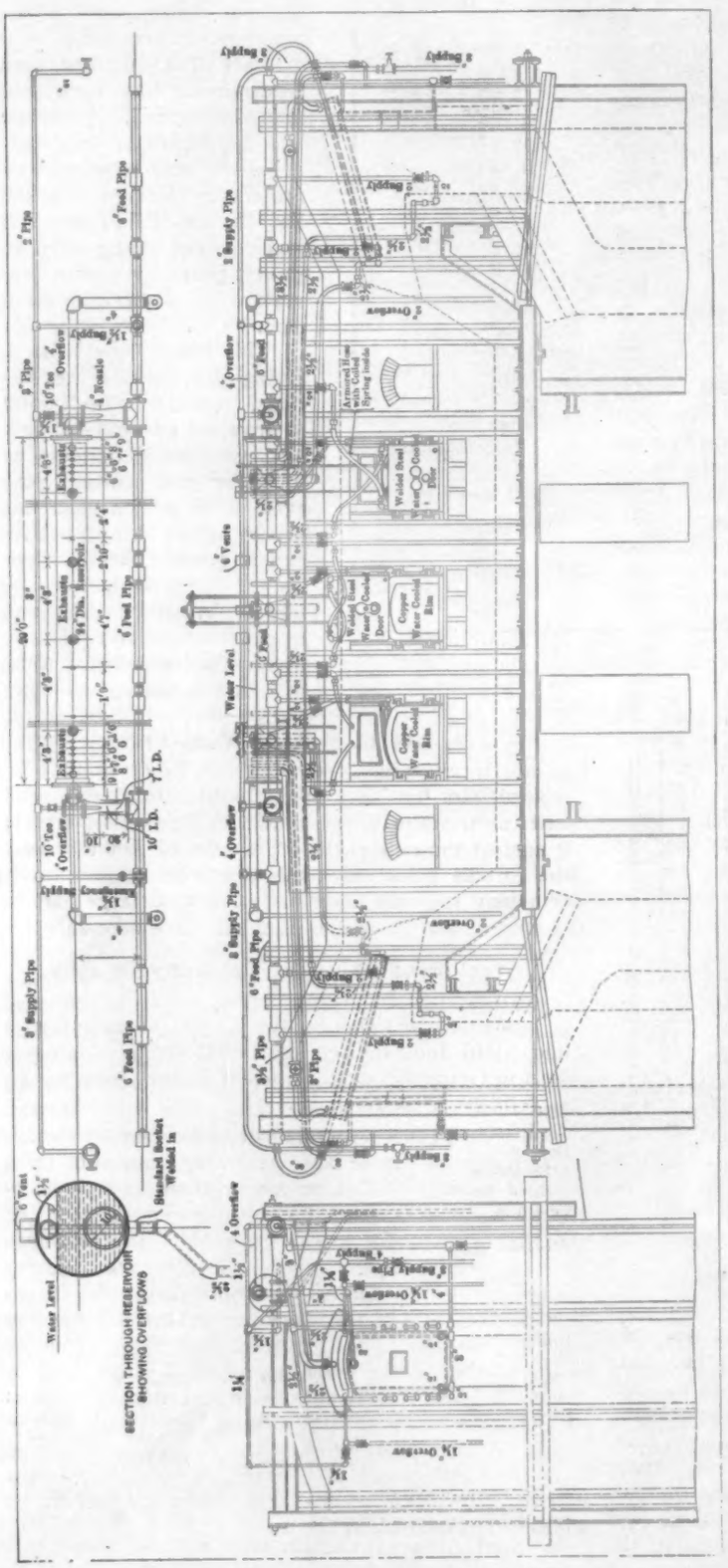


Fig. 1.—Plan and Elevation of Water Cooling System for Open Hearth Furnaces.

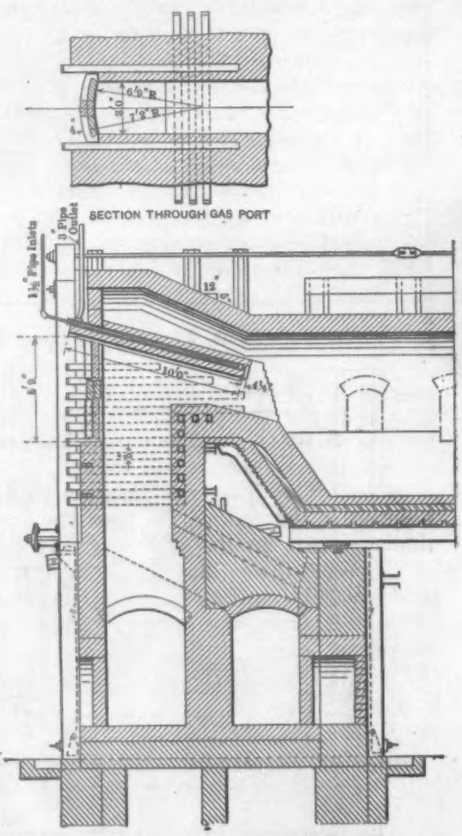


Fig. 2.—Section Through Port Cooling Devices.

this particular installation a 24 in. in diameter wrought pipe. In some cases these tanks have been set between the crane girders and in others carried on the roof trusses, but the position on the top of the furnace is preferred as giving the shortest piping. The return or hot water rises from the time it leaves the part which is water cooled until it enters the tank, where it discharges at about 1½ in. above the surface of the water. The main feed line, as shown, takes its supply out near the bottom of the tank, so as to secure the coldest water in it. The fresh supply is added through an injector, so that it will thoroughly mix with the hot water from the tank and enter the feed line at the same temperature; also to facilitate circulation through the part being cooled which otherwise would depend entirely upon the heat. The overflow is made sufficiently large to carry away the hot surplus water and several large vents are provided so that the water can give off heat and easily escape from the tank. The loss of water is very small except what is discharged at the highest temperature, the saving over the ordinary way of cooling being put at 80 per cent.

Fig. 2 is a section through the center of the furnace, showing the air and gas ports as they enter the furnace, and a cross section through the ports and gas uptake. The port or arch cooler as shown is a bronze casting, internally divided into two chambers, a distributing chamber and a cooling chamber. This casting is about 4 ft. wide and 13 ft. long and weighs about 5000 lb. It is carried on the side walls of the port and is so constructed that it supports the arch over the gas port by means of water cooled skewbacks. The brick built over the top of the cooler prevent incoming or outgoing gases coming in contact with it, except with the crosspiece in the nose of the port, which

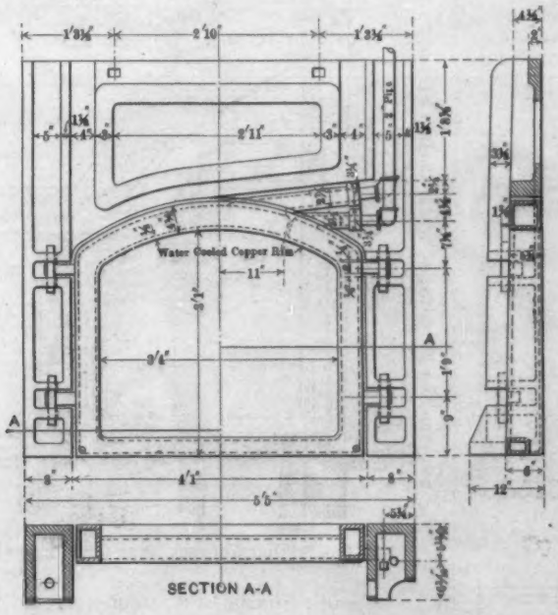


Fig. 3.—Water Cooled Door with Copper Rim.

holds the front of the latter intact. The bulkhead, like the port, supports its own brick lining, and a hole 10½ x 13½ in. is provided to permit of repairs to the bottom of the gas port. In the division wall square cooling boxes are placed, preventing air and gas from leaking and preserving the sides of the port against cutting. Similar boxes in front of the uptakes prevent the cutting out of the latter. The employment of these port cooling devices has resulted in holding the nose of the port at the point where the best combustion is obtained from the meeting of air and gas. In practice it is found that the 4½-in. thickness of silica brick laid upon the cooler casting is in time reduced by heat to 3½ in., but the cooling action is such that there is no further cutting down of the brick. All the water cooling devices shown on this furnace can be cooled with a 1¼-in. stream of water at 30 lb. pressure.

The door frame shown in Fig. 3 is equipped with a copper rim or subframe, which keeps the jambs and arch cool and increases the life of the front walls, this increase being in some cases as much as 50 per cent. The protection of the jambs and arch against damage from charging boxes is also an advantage of the rim. It also prevents leakage of hot gases between the door and the door frame, with their destructive action

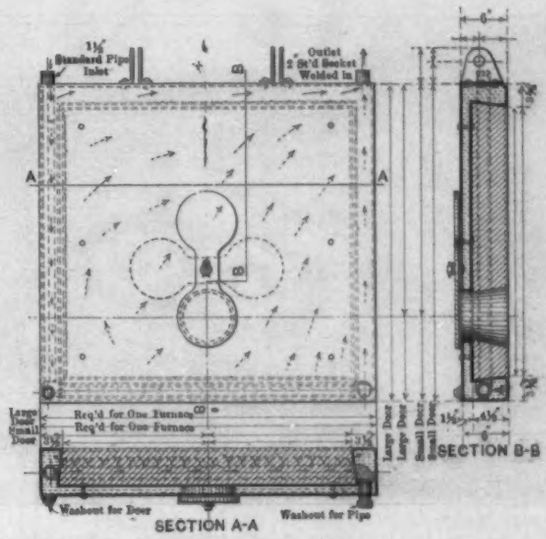


Fig. 4.—Welded Steel Water Cooled Door.

on the door. The copper rim is a single casting weighing about 400 lb.

The new Knox welded steel door which was a part of the South Sharon installation is shown in Fig. 4. It is made of soft steel plates and is calculated to outlast by a considerable time a casting of iron or steel, as in nearly all cases cast doors fail by cracking. The welded steel door is provided with a feed pipe, which carries the water to the bottom of the door and sprays it against the only part that is exposed to the flame of the furnace. The door can be readily washed out by removing the plug shown at its lower edge.

Steel Production in Germany in 1909.

Statistics compiled by the Verein deutscher Eisen und Stahl Industrieller show that the production of steel in Germany and Luxemburg in the year 1909 was as follows in metric tons:

	Acid.—Tons.	Basic.—Tons.	Total.—Tons.
Ingots:			
Bessemer	151,148	7,517,451	7,668,599
Open hearth	228,798	3,844,139	4,072,937
Castings	83,014	123,442	206,456
Crucible steel	.....	.....	84,069
Electric steel	.....	.....	17,773
Totals, 1909	462,960	11,485,032	12,049,834
1908	598,311	10,480,349	11,186,379
1907	685,161	11,378,471	12,063,632
1906	715,952	10,591,855	11,307,807
1905	655,495	9,411,058	10,066,553
1904	610,697	8,319,594	8,930,291
1903	613,399	8,188,116	8,801,515
1902	517,996	7,262,686	7,780,682
1901	465,040	5,929,182	6,394,222
1900	422,452	6,223,417	6,645,869

It is noteworthy that while Germany has been forward in the introduction of the electric steel furnace, the production of electric steel did not increase in 1909, but was slightly less than in 1908, the total for the latter year being 19,536 tons. It will be seen that the total of steel production in Germany in 1909 was about 14,000 tons less than in 1907, though there was an increase of more than 850,000 tons over 1908.

The Ferro Machine & Foundry Company's New Core Oven Equipment.

A core oven equipment that is unique in having the ovens on the two upper floors fired from the first floor has recently been placed in operation by the Ferro Machine & Foundry Company, Cleveland, Ohio. The equipment is believed to be the largest in the country for making small cores and so far as is known no similar ones have been built where provision is made for firing ovens located more than one floor above the fire boxes. In planning the plant, in conjunction with the J. D. Smith Foundry Supply Company, contractor for the installation,, the Ferro Company treated core making as about the most important part of its foundry work, and much time and thought were given to it, so that the quality of the castings might be as high as possible. The company makes castings for and builds marine engines and also does an extensive business in the manufacture of automobile parts.

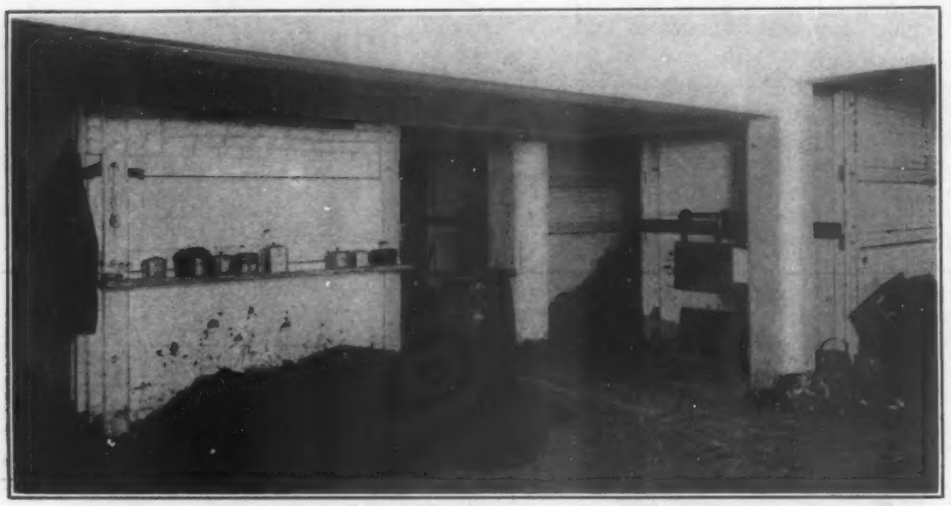


Fig. 1.—The Fire Boxes on the First Floor of the Ferro Machine & Foundry Company's Core Oven Department.

The plant is in a three-story brick and steel building, 77 x 111 ft. The entire structure is devoted to the core department and room is provided for 175 to 200 coremakers. The first floor or basement is used for mixing and preparing the sand for the second and third floor work. The ovens are all coke fired from the fire boxes on the first floor, shown in Fig. 1, so that all the rough, dirty work in connection with the making of the cores is confined to this floor, which is very desirable. The building is equipped with an elevator, which is used for handling the sand and for taking the cores from the third to the second floor.

The ovens on the third floor, illustrated in Fig. 2, consist of two batteries of eight ovens each, of the rolling drawer type, built by the J. D. Smith Foundry Supply Company, Cleveland, Ohio. Each oven contains six drawers 34 in. wide and 60 in. long, so that the 16 ovens on this floor have a total capacity of 96 drawers. The ovens on the floor below are arranged in two batteries of four ovens each. As each oven is five drawers high, the total number of drawers on this floor is 40. These ovens are used largely for pasting and blacking, although some of the heavier cores are baked on this floor.

As will be noticed from Fig. 2, the drawers are opened and closed by mechanical means. Above each oven is a small traveler from which an arm carrying a number of short brackets hangs. The free end of the bracket fits between two small projections on the front of the oven drawer and is fastened thereto by a bolt when it is desired to open or close the drawer. The traveler then moves forward or back along the channel iron track and carries the drawer with it. The operation of this device is shown at the right of Fig. 2, where one of the drawers has been pulled open. The batteries of ovens on each floor are placed back to back and, as the ovens are located practically at the center of the building, the second and the third floors are each divided into two rooms. Confining the fire boxes to the first floor makes a very desirable arrangement for the other two floors.

Fig. 2.—A View of One Series of Ovens on the Third Floor.

The coremakers work on an unusually good type of corebench, and these are separated so that the work of one coremaker cannot injure that of an adjoining workman. A series of benches is provided which may be changed around to suit the changing conditions of the work in the corerooms.

The entire equipment was installed by the J. D. Smith Foundry Supply Company.

The Blower Patented Steel Track Tie.

Advantages of Its Use in Mines.

Different types and details of the construction of a steel railroad tie, invented by J. W. Blower, general manager of the Hisylvania and the Colburgh Coal companies, Columbus, Ohio, are given in the accompanying illustrations. This tie is used in the properties controlled by these companies and was invented by Mr. Blower to overcome the difficulty of securing wooden ties which would give satisfactory service in the mines.

One type of tie made is illustrated in Fig. 1; Fig. 2 shows the details of another type of the tie as used in the mine at Trimble, Ohio, while Fig. 3 illustrates the second and a third style, as well as a spreader tie. The first type of tie is made by splitting the head of an ordinary T-rail and lifting up enough of the head to fit the base of the rail to be placed thereon. The end of the tie is bent upward, so that the lower edge of the slot in which the rail rests is horizontal and the inclined ends of the tie prevent lateral motion of the track. A hole is drilled through the head, so that it penetrates the center of the web, and a cotter spike

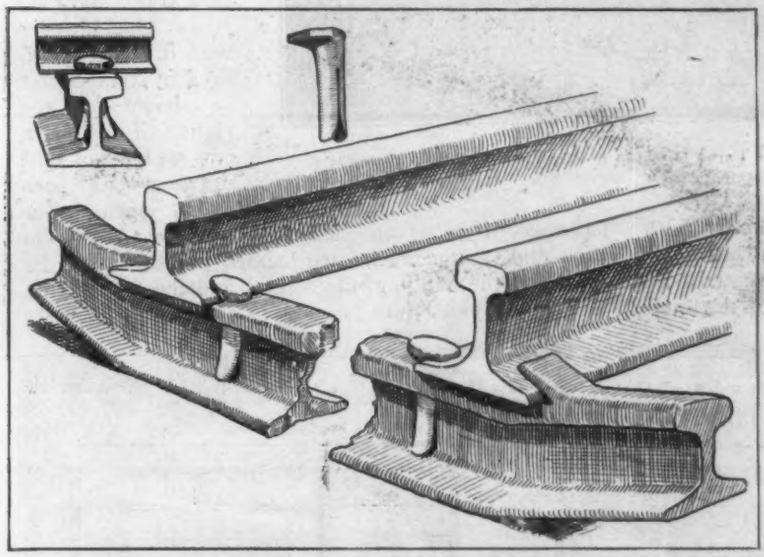


Fig. 1.—Tie Made from Scrap Rail with End Bent Up to Avoid Lateral Movement of Track.

is driven in. The web splits the spike and spreads it out at the lower edge of the hole in the head of the tie. The second type of ties were first used in a mine at Trimble, Ohio. They differ only in that the head of the rail is split toward the track rail and bent back over the base of the latter. In six hours the mine blacksmith was able to make 77 of these ties from scrap rails of 16 and 20 lb. sections, which carried a 56-lb. rail. This new track was laid, it is stated, in less time than was required to take up the old one and with only about one-fourth the labor necessary to lay the same amount of track with wooden ties. No track gauge was needed and no tools were employed except the hammer. This track has been in continuous service with a 10-ton motor and train of cars operating over it every day. No tamping is required,

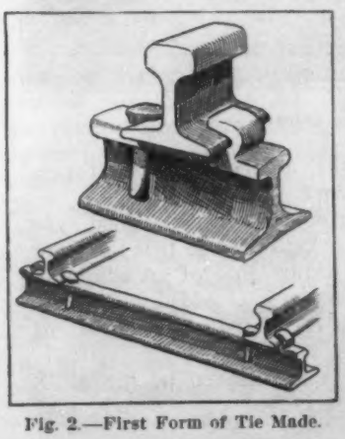


Fig. 2.—First Form of Tie Made.

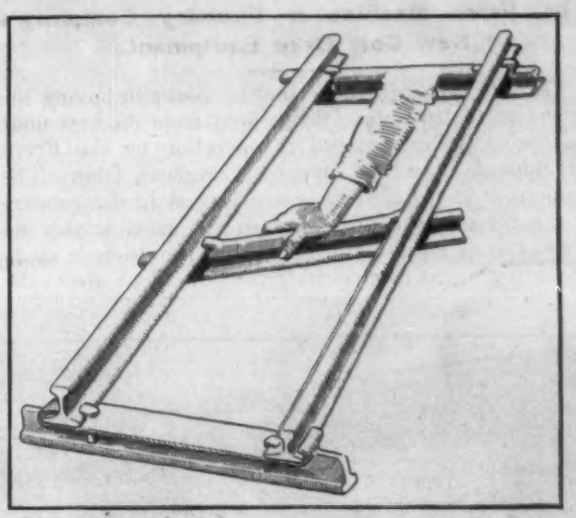


Fig. 3.—The Three Types of Tie, the Original Model, the Spreader Tie and the Inverted Model.

as the motor is employed for this purpose. If, however, a low spot in the track is discovered, it is leveled and ballast placed under the track and tie.

In Fig. 3 the top tie is of the type last mentioned. The middle tie is a spreader which is used between the regular ones when it is desired to omit the cotter spikes. It is easily slipped in place by hand and is kept in position by the ballast around it. It is especially adapted for mines having soft bottoms. The lowest tie is similar to the upper one, except that the tie rail is turned upside down and the track rests upon the base of the tie rail instead of the head.

It was found that the steel tie will take the place of at least two old style wooden ties, because the rail is supported by ballast, and under these conditions is cheaper than wood. Either new light section rails can be bought cut to the proper length for ties or scrap rails can be used. Another thing taken into consideration is that, while wooden ties and rails formerly constituted an expense to be charged against the operation of the mine, the steel ties and rails can be entered under the plant account, as they become a permanent improvement to the mine. Some idea of the saving with the use of steel ties is apparent when the statement is made that while $1162 was spent in one year for wood rails alone, it was found out that the additional expenditure of $335 would equip the same amount of track with steel rails and ties for all time and thus permanently eliminate all expense for wood in the tracks.

Among the advantages claimed for this form of tie are ease of laying the track and the assurance of a positive gauge, a perfectly bonded rail, which requires only a single conductor instead of a twin cable, a great increase in the hauling capacity of motors, horses and mules, and a cleaner mine, as the coal will not be jolted off the cars by reason of the high and low joints and ground up. With this type of tie all turns and room partings can be laid with the regular tie, and no special ones are required for joints or switch points.

With the ordinary wooden tie, spaced 2 ft. on centers, 2640 ties are required per mile of track, and in laying a rail that weighs 30 lb. per yard, with 42 in. between the rails, a 4 in. x 6 in. x 5 ft. tie must be used, which makes the cost foot up to $528, with an additional amount of $75 for spikes, bringing the total cost per mile up to $603. In laying one mile of the

same track with steel ties weighing 12 lb. per yard, the number of ties is cut in half, and as the cost per tie, including the cotter spikes, is only 30 cents, the saving in material alone is $207 per mile, while the cost of labor is only about one-quarter that required for the wood tie.

Where a solid foundation is found, as is generally the case in mines, the amount of repairs would be very small, and even in the case of railroads only the ordinary repairs caused by wrecks or freshets would have to be made. It is also stated that for any well ballasted roadbed this tie base, plus the base of the rail, is equal in bearing area to the ordinary wooden railroad tie.

Announcement is made that the Chicago Pneumatic Tool Company, Chicago, has engaged Nelson S. Gottshall to manage the Chicago branch department for the sale of its cars. These are small motor cars adapted for delivery purposes of commercial concerns requiring a medium capacity.

A Foundry of Reinforced Concrete.

The Goodell-Pratt Company's New Foundry and Pattern Shop.

A good example of a small reinforced concrete structure which is particularly desirable when resistance to the attack of fire is sought is the new foundry of the Goodell-Pratt Company, at Greenfield, Mass.

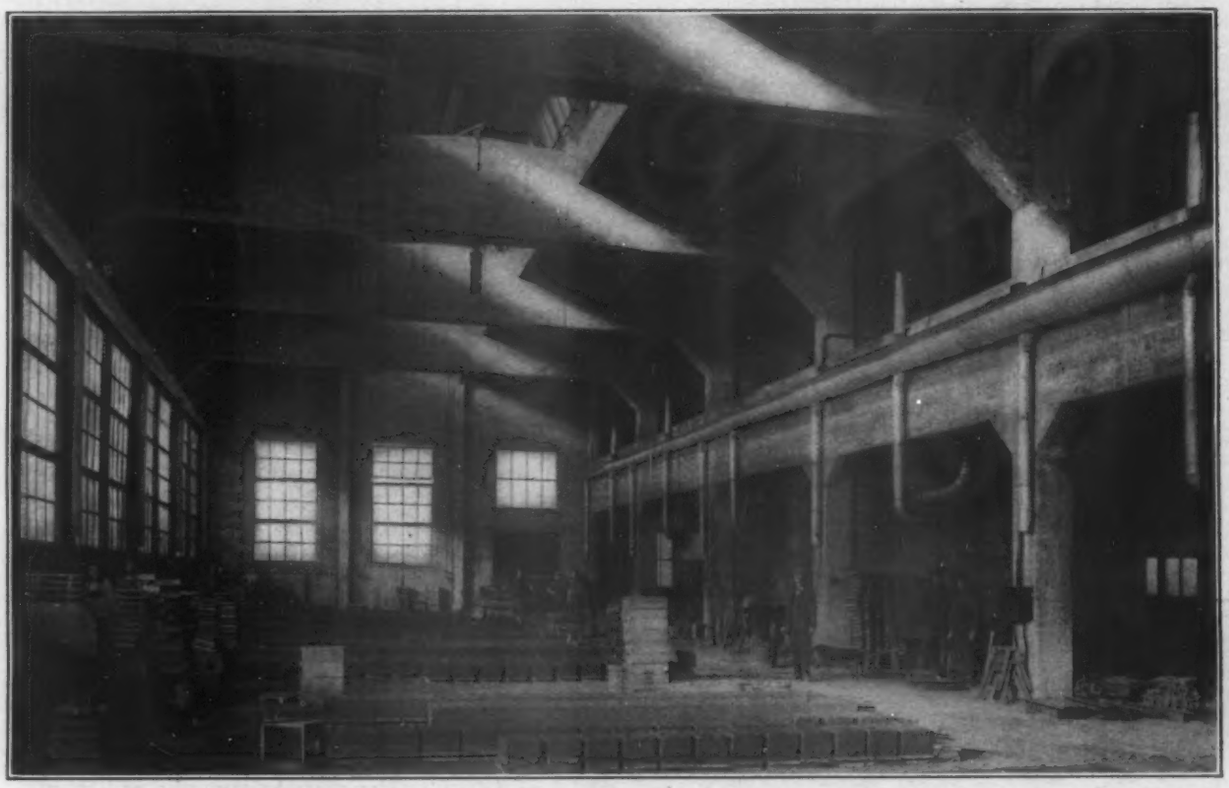


Fig. 1.—Interior of the Reinforced Concrete Foundry of the Goodell-Pratt Company, Greenfield, Mass., Built by the Aberthaw Construction Company, Boston, Mass.

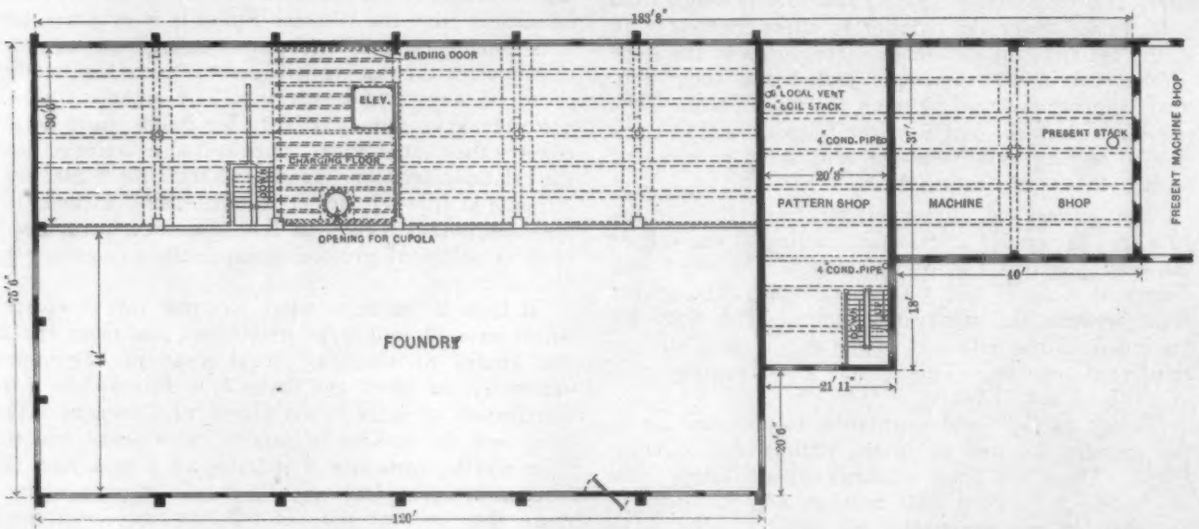


Fig. 2.—Ground Plan of the Foundry and the Pattern and Machine Shop Extensions.

This building was erected by the Aberthaw Construction Company, Boston, Mass., and in addition to the foundry includes a pattern shop, 21 x 54 ft., and a machine shop, 35 x 40 ft., both of three stories. All are of reinforced concrete except the machine shop, which is of brick, with reinforced concrete floors and roof. As far as possible it has been the aim to avoid columns, thus insuring an unbroken floor area and an even light. How well this has been done may be seen in the view inside the foundry, given in Fig. 1. Fig. 2 shows the general arrangement of the different departments. On each floor in the machine shop, as will be

noticed by referring to the floor plan, there is but one column, which is centrally located and supports a long transverse central beam. Two sets of comparatively short longitudinal beams spaced about 6 ft. apart meet each transverse beam, and in connection therewith support the two floors and the roof. In the pattern shop the three floors are entirely free from columns, and beams spaced 6 ft. apart furnish all the support needed.

The casting floor of the new foundry is clear of all obstructions and has an area of 44 x 120 ft., with a clear hight of 25 ft. under the large transverse reinforced concrete beams. On the east side a 30-ft. gallery extends the length of the room. The side walls are 6 in. thick and are buttressed by pilasters 20 ft. apart. The walls at the ends of the foundry are 9 in. thick and those between the foundry and the adjoining pattern shop are 12 in.

The concrete foundations are carried down about 5 ft. below grade and are in the nature of sills, 3 ft. deep by 4 ft. wide, and reinforced by steel rods embedded in both the top and bottom surfaces. The walls and the pilasters are built integral with these foundations. Under the machine shop and in other places where there is considerable weight to be supported the width of the foundations is increased to from 6 to 8 ft.

Plain or twisted rods were used as reinforcement. The 6-in. walls are reinforced with ⅜-in. rods spaced 9 in. on centers, while those in the 9 and 12 in. walls are placed 12 in. apart in both cases and the diameters are ½ and ⅝ in., respectively. All the reinforcement is horizontal and is located at a distance of 1½ in. from both the inside and outside surfaces. Wherever curtain wall and pilaster construction is employed the pilasters are on the outside and taper from the base to the roof. The vertical reinforcement of the pilasters consists of ¾ or ⅞ in. bars located at the corners and hooped together by ¼-in. bars at 1-ft. intervals. All 9 and 12 in. walls are without pilaster support. The roof, including the monitor over the casting floor, is entirely of reinforced concrete beams of massive construction. The main transverse beams, spaced 20 ft. apart, rest on the wall pilasters and vary in depth from 5 ft. 10 in. under the monitor to approximately 3 ft. at the far end; the difference corresponds to the slope of the roof in that distance. Jack beams about 8 ft. apart support the roof between the main beams. The monitor covers the length of the foundry, and in addition to serving as a means of ventilation provides an even light on the casting floor.

The gallery is supported by transverse beams, 12 x 27½ in., spaced 20 ft. apart, resting at one end on the wall pilasters and on columns at the other end. Beams 10 x 20 in. and 5 ft. apart support the gallery floor between the transverse beams. The floor for the cupola is the only part of the gallery which is not reinforced concrete. This is built of steel plates 5-16 in. thick on steel I-beams.

Plenty of light and ventilation is provided for in the foundry, as well as in the pattern and machine shops. There are large windows which occupy most of the space between wall columns and the sides of the monitor are practically all window area. The monitor sashes are pivoted horizontally, so that they may be opened for ventilating purposes, and in addition the windows in the foundry are hung upon vertical pivots, so that in connection with the open monitor sashes, a good circulation of air may be maintained.

The Alberger Condenser Company and Alberger Pump Company will remove this week from 95 Liberty street to the West Street Building, 140 Cedar street, New York City. They have heretofore occupied 2950 sq. ft. of floor space, distributed on two floors, but in their new quarters will have 4800 sq. ft., all on one floor.

Canada's Western Market.

A Promising Field for Manufactured Products.

TORONTO, April 16, 1910.—With the opening of navigation, business on Western account becomes quite active. In the part of Canada west of the lakes the development of manufacturing interests has gone on rather faster than people in the East expected, but, of course, manufacturing enterprise is still in its infancy there. The Canadian West is a capacious market for the products of the mills, factories and workshops of Ontario and Quebec. The demand from that quarter figures very largely in the business done by Canadian manufacturers.

The crop harvested last autumn in Manitoba, Saskatchewan and Alberta put the majority of the farmers there in relatively easy circumstances, for it was the largest aggregate crop they ever raised, and the prices realized were close to the highest they ever received during the period of active marketing. This year it is expected that a very much larger acreage will be sowed, and the season opens as the best crop years of the past have opened in spring. The country looks forward to a prosperous twelvemonth.

The United States and Germany Seeking Canadian Trade.

A matter, however, in regard to which home manufacturers are not satisfied, is the prospect of increased competition on the part of United States manufacturers. It was observed with no small degree of interest that United States manufacturers within comfortable striking distance of the Canadian market west of the lakes made strong representations to President Taft in favor of avoiding a tariff war with this country. That was understood to indicate that they planned to push trade aggressively in that part of Canada, and to get as much as possible the benefit of the expansion there. This year United States competition is sure to be very vigorous there. German competition will also be felt, for German travelers are now abroad in the country as they never were before. The conditions are favorable to the Americans. Another great influx of settlers from the Western States is in progress, and it is confidently predicted that the homeseekers from that quarter this spring will greatly exceed in number those of any former spring. The newcomers will naturally have some partiality for goods made in the country they came from. They will also desire to have the relations between Canada and the United States as intimate as it is practicable to have them. Hence, it is improbable that these new inhabitants of Canada will favor a policy of protection, especially as against the United States.

It is to be borne in mind, too, that the West's political strength will make itself more and more felt in the affairs of Canada. Next year the Dominion census will be taken, and that will be followed by a redistribution of seats in the House of Commons. The West will be entitled to several more seats, and the East will be fortunate if it holds all it now has. In Parliament, therefore, the West will count for much more than it ever did before, and the Government will be constrained to show respect to the West's desires. There is reason to believe that in coming to its recent tariff agreement with the United States the Canadian Government was influenced by the consideration that the leaning of the West was strongly on the side of freer trade between the two countries.

Mining Plant for Ontario.

The forwarding of mining plant and machinery into the camps far from the railroad base in northern Ontario has been a feature of the early spring business. This outfit is urgently needed for the summer's operations at several of the most promising mines of the remoter camps, and if they should not get to their destination before the break up of the winter roads

the whole season would be lost. As it is, the cost of getting in heavy machinery and supplies is burdensome. Drills, compressor plants, boilers and other machinery have been brought long distances over the trail by team haul.

Gowganda, Elk Lake, Porcupine River and other localities some distance from the railroad line are affording business for the manufacturers of mining plant. C. A. C. J.

Cincinnati's Continuation School.*

The Method Pursued in the Education of Apprentices.

BY J. HOWARD RENSHAW, INSTRUCTOR.

The continuation school is attended by some 200 apprentices of varying age, employment and scholastic attainment. The majority come from the machine shop; the pattern shop is represented by a score and the drafting room sends a dozen. Some have a high-school education, while others of the immigrant class are not familiar with English and still others have not much more than an ability to read and write, if that ability. They all must have attained the age of 16 years before they enter the shops as apprentices and this counts for a good deal.

The nine sessions per week make it possible to have nine grades of school work, if that were desirable, but the fact that no two boys are sent from the same department at the same time and that a classification according to age in service is preferable for the first year or so has materially influenced the course of study and gradation. Odious comparisons are avoided by teaching the beginners some of the more advanced lessons and the older apprentices who come later in the week some of the easier and more important lessons. This inconsistency will take care of itself as the older apprentices graduate. The lessons are of a nature which permits of personal instruction, although class work is preferred when possible, as is nearly always the case.

The work of each student is kept in an envelope under his own name, and this envelope is given out at the beginning of each lesson and filed in a cabinet at the close of each lesson. Many valuable blue prints are also filed in the same manner. The manufacturers have provided the school with 25 copies of suitable blue prints and these serve for lessons in the reading of drawings, &c. The library of the school is made up of catalogues (25 copies each) of the various manufacturers and they serve for reading, spelling, &c. Text books are provided by the Board of Education but are of little service except for reference.

Special Lessons, Styled "Jigs."

When these books failed to interest the apprentices, lessons were prepared and styled "jigs." A lesson is prepared by the instructor and just so much of the lesson is traced on tracing cloth as will save the apprentice doing unnecessary mechanical preparation. This tracing is used to make a brown print and the brown print is used to produce a white print, *i. e.*, a white background with blue or black lines. Twenty-five copies of this are made and given out for a lesson. The lesson consists in filling in the missing parts, which necessitates instruction in the principle of the lesson and subsequent exercise in its application on the part of the apprentices. The time saved to the apprentice is enormous and the only effort on his part is along the line of the principle. The lesson paper contains sufficient exercises to produce skill as well as knowledge.

These lessons cover the course in arithmetic, algebra, geometry and trigonometry in mathematics, and while there is the usual sequence of principle the lessons are far different from the arithmetic as known to the general scholar. The abstractions are replaced by applications such as the following:

Fractions Taught in a Practical Manner.

Addition of common fractions is an exercise with the thumbnail and a scale.

Multiplication of common fractions is accomplished with a layout of a machine drive in which the number of teeth in the gears are used for the numerator and denominators.

Division of fractions is much like multiplication, with the pulley diameters or pitch diameters for the fractions. Since these are nearly always fractional the problem is one of complex fractions.

These problems are taken from catalogues and blue prints already mentioned and are intensely interesting to the apprentices in many ways.

The subject of decimal fractions is handled in much the same manner, the nature of the lessons being as follows:

Addition of decimals is best exemplified in the usual shop payroll and the subsequent bank slip.

Subtraction is most often met in making change, and a jig showing the operations of a cashier making change and the necessary checking of the day's cash is found a profitable and successful lesson.

In this same practical manner the entire course in mathematics is carried out to the satisfaction of the teacher and apprentices.

Shop Spelling Is Taught.

Shop spelling is not overlooked, and the parts of the master mechanics' tools, such as lathes, planers, drill presses and milling machines, &c., are numbered and the names written from memory, as the special part is pointed to or number called. The names of such as screws, tongs, hammer dogs, wrenches, &c., are given out and the article sketched as well as spelled. The importance of this work cannot be overestimated, since profanity is an indication of lack of vocabulary, and an apprentice should learn early to call things by their legitimate name.

The geography of iron, coal, &c., and their history and relation to commerce comprise an apprentice's early reading, followed by enough science of steel, &c., to bring out the law and order of the universe for the purpose of developing a wholesome respect for the many sacrifices which organization and production on a large scale necessitate.

Natural philosophy of a popular nature, mechanical drawing, debate, composition, &c., furnish a means of developing executive ability so much in demand. An interesting collection of spoiled work is being brought in and a detailed description of the cost of material, time on work, &c., is written in a little composition book and attached to the piece much like a tag; this will serve as a caution to apprentices for years to come and should be a valuable asset of the school when a quantity of it is catalogued.

Common Good Found in Shop Instruction.

The two half days a week which the instructors spend in the shops is productive of common good. The boys appreciate an interest in their welfare, and the contact with the shops helps the instructor to remain practical if not skilled. The foreman has and takes advantage of the opportunity to question and advise, and herein lies the success of the school. The instructor is able to diffuse useful information and keep alive a friendly rivalry, while taking care of petty antagonism or case of negligence.

Success in a continuation school is spelled with the letters of two words—friendly foremen. It takes gilt-edged results to win them, and the fact that they have been gradually won over to the idea of a school which takes the apprentices away from them for half a day each week in order to increase the department production is proof of the success of the school.

* Address before the National Metal Trades Association, New York, April 14, 1910.

A New Landis Self-Contained Grinding Machine.

A Heavy Duty Machine of Original Design.

In addition to the cam grinder that was illustrated and described in *The Iron Age* March 24, 1910, the Landis Tool Company, Waynesboro, Pa., has recently brought out another new grinding machine designed and built on original lines, which is self-contained and intended for handling heavy work. Figs. 1 and 2 show the front and rear of the machine, respectively, arranged for a countershaft drive, and Fig. 3 is an end view illustrating the arrangement of the electric motor drive. The construction of the entire machine accords with high power and heavy duty, and while intended for finishing all classes of work within its range, it is especially adapted for such operations as grinding chilled rolls.

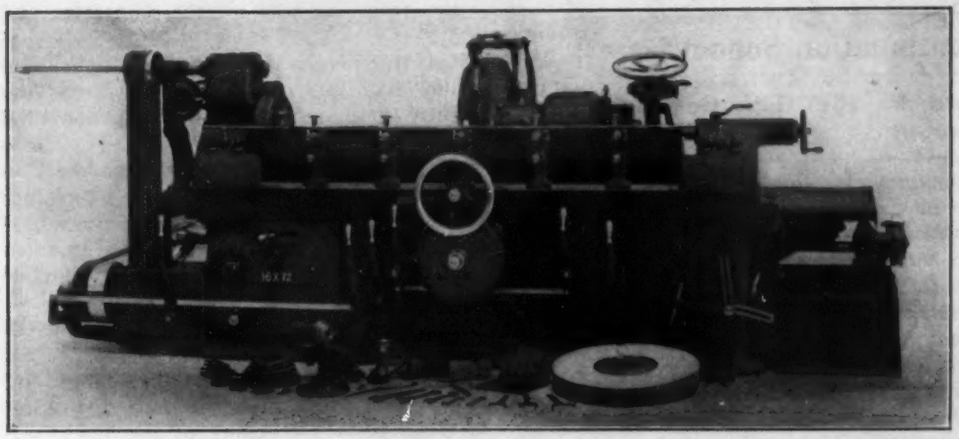


Fig. 1.—Front View.

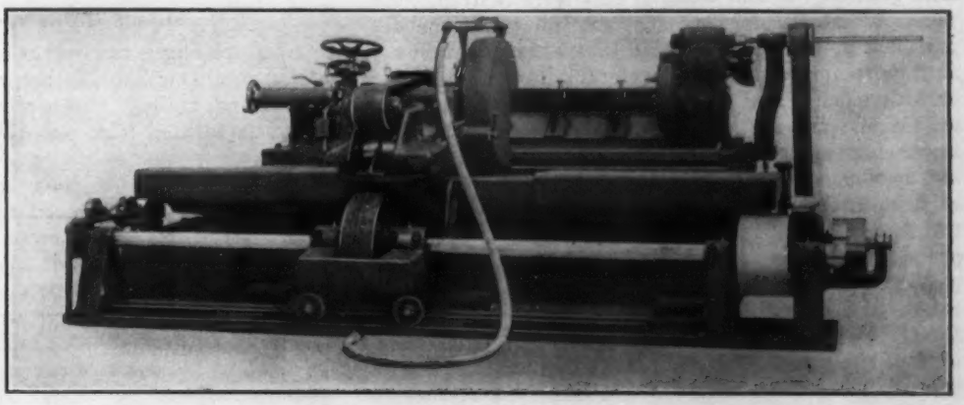


Fig. 2.—Rear View.

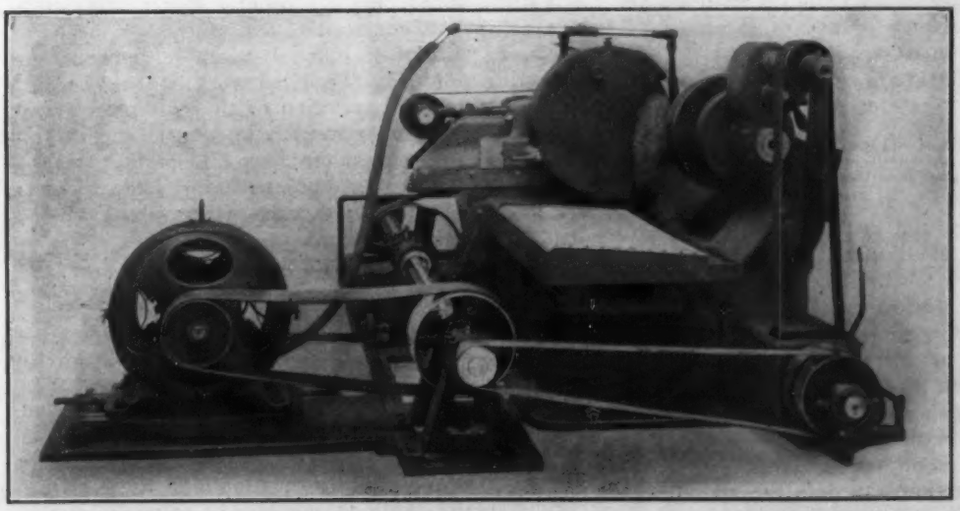


Fig. 3.—End View, Showing Motor Drive. A New Heavy Duty Self-Contained Grinding Machine Built by the Landis Tool Company, Waynesboro, Pa.

The regular practice in grinding the bodies of these rolls is to support the roll by its journals in bearings mounted on the table of the machine, the journals or necks having been previously ground while the roll is carried on centers in the same manner as for ordinary plain grinding. The grinding wheel is 24 in. in diameter and the guard is so arranged that it may have any width of face not exceeding 4 in. The wheel can be used at the full diameter for grinding 16-in. rolls, which occupy the entire swing of the machine. An equalizing fixture is provided to compensate for any slight error in the alignment of the headstock and roll axes and to avoid any tendency of the drive to force the roll from its true axial position with the bearings. This is attached to the face of the headstock and drives the roll with equal force from points on opposite sides of the center. The importance of the roll face being true and concentric with the journals in roll work is well known, and it is stated that the above described method has been found to be the only practical and reliable one for securing this when finishing rolls on the grinder. Another feature said to contribute much to accurate work is the stationary work table, which is supported its entire length by the main column of the machine. The bearings for supporting the rolls when grinding the bodies and the equalizing driving fixture are not shown in any of the views of the grinder, but are furnished as regular parts of the equipment when the grinder is intended to be used for roll work.

This machine is also adapted for railroad shop work, for grinding locomotive pistons, piston valves, valve stems, cranks, links, knuckle pins and axles. It is provided with a gap which can be located at any point along the table to suit the work to be done when the machine is built. Fig. 3 illustrates the arrangement of the electric drive, as well as showing an end view of the machine when

provided with a gap for locomotive work. With this gap pistons can be ground with their heads in place, and the swing of valve yokes when grinding the stems can also be taken care of.

The machine is self-contained and designed to be driven either by a motor or from the line shaft. With either form of drive the power is applied to the main shaft at the rear of the machine, and distributed and transmitted to the different working parts from there. The grinding wheel is belt-driven from the large pulley shown in the rear view, and located about the center of the machine. This is mounted in a carriage rolling on the track, which is shown as extending from the base of the machine, and travels with the wheel carriage as the latter is traversed. The pulley is driven by step grooves on the main shaft, engaging rollers in its sleeve, or hub, thus making a practically frictionless drive, as the pulley is traversed, or slides, over the shaft.

The grinding wheel belt is 6 in. wide and runs over intermediate pulleys arranged to take up any change in its length automatically, and at the same time keep it under a constant and uniform tension. This belt has an arc of pulley contact of almost 200 degrees on both the driving and driven pulleys, and it is said that it can stretch and thus increase its length about 8 in. before it becomes necessary to shorten it by removing a section. The grinding wheel head is massive and rigid, which is an essential feature for rapid and perfect grinding. The spindle is of large diameter and is made of hardened steel. The phosphor bronze bearings are self-aligning and self-oiling and are adjusted in tapers for taking up wear. An important feature of this head is that the bearings are protected by special covers and are practically dirt proof. Provision is made for balancing the grinding wheel by having two adjustable weights mounted in a circular or annular groove in the side of the wheel collar or center.

The headstock is powerfully geared and possesses ample power for driving the largest piece of work or roll that can be placed in the machine. Five changes of speed are obtained mechanically by moving a single lever. By changing a back gear in the gear box at the end of the machine another range of five speeds is obtained, making a total of 10 working speeds. These speeds are indicated on a dial on the front of the machine, and the changes can be quickly and easily made. All parts of the clutch mechanism are of hardened tool steel, and all gears are finished by planing.

The work revolving and traversing mechanisms are driven from the gear box at the end of the machine, which receives its power from the main shaft by a belt. The rotary and traverse drives of the wheel are started and stopped simultaneously by a clutch in the pulley on the end of the gear box, which is operated by a lever at the front of the machine. If desired, these drives can be operated separately and their speeds varied entirely independently of each other. The pump is driven from the end of the main shaft.

The New England Foundrymen's Association.—This society held its monthly meeting at the West Side Club, Providence, R. I., April 13, and passed the afternoon as the guests of the Providence members and of the General Fire Extinguisher Company. They visited the model plant in the suburban town of Auburn, and gave it a thorough inspection, particularly the foundry, of which Henry A. Carpenter, a former president of the association, is the manager. The meeting was held after dinner. The Wheeler Foundry Company, Worcester, Mass., and the Mason Machine Works, Taunton, Mass., were admitted to membership. The remainder of the evening was given over to a discussion of foundry and factory lighting, representatives of various companies giving an exposition of their methods of illumination.

Pneumatic Service for Metal Working Plants.

Advantages of Multi-Stage Compression and the Use of Intercoolers.

BY S. RICE.

For many years it has been the rule, rather than the exception, to find metal working shops fitted with the best of pneumatic tools and appliances, but the most wasteful apparatus for compressing air. Inventors and promoters of apparatus using compressed air are responsible for this to a certain extent, because while they have been actively engaged in improving efficiencies and widening the field of application, they have apparently considered compressed air only as delivered to the machines or tools of their design, without giving much thought to the cost of production and delivery. As the use of pneumatic appliances is extended in each individual plant and increased compressing capacity is required, this indifference is, however, giving place to a consideration of the economies possible in the cost of production. It is not the purpose of the present article to treat of these economies in detail; but merely to call attention to the advantages of multi-stage compression for anything beyond very moderate pressures, and to outline the further benefit which may be derived from the use of intercoolers.

The limit of discharge pressure for single stage compression should not exceed 70 lb., and where a permanent plant of any considerable capacity is to be installed, unless the cost of developing the required power is exceptionally low, it will be found profitable to use multi-stage compression at even lower pressures. For the pneumatic service of machine shops, foundries and other common industrial purposes two-stage compression is ordinarily sufficient; for the higher pressures occasionally found necessary, three or more stages should be used.

The efficiency of multi-stage air compressors depends, to a large extent, on the temperature of the air as it enters each successive stage of compression. All other things, such as clearance, valve area, jacketing, &c., being equal, greater efficiency will be obtained, the lower the temperature of the air between any two stages. This is part of the theory of compression, and has been proved in practice; the lower the temperature the smaller will be the volume of a given weight of air, and in consequence the greater will be the weight which can be taken into the cylinder.

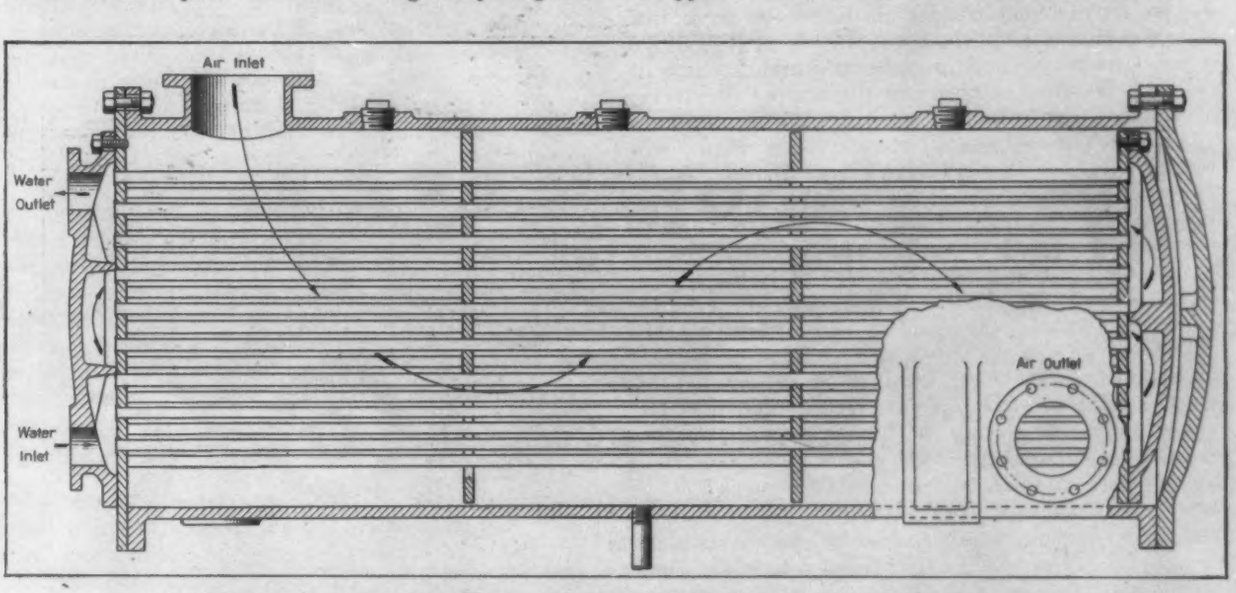
The process of compressing the air tends to heat it, thereby giving a lesser weight per unit volume for any particular pressure. In compression work this increase in temperature depends on the limits of admission and discharge pressures. To reduce the temperature of the air between stages of compression and thus increase the weight of air which the compressor can handle use may profitably be made of an intercooler.

Intercoolers.

While the highest efficiency can be obtained by lowering the temperature of the air at the end of each compression stage to the admission temperature of that stage, the cost of the cooling apparatus is so great as to make this plan impracticable from a commercial standpoint. The aim of all reputable manufacturers of compressors, therefore, has been to so proportion the cooling apparatus that a balance is struck between the cost of compression and cooling. This is accomplished by carrying the cooling to the point where the maximum economy will be obtained, but in doing so care must be taken not to go beyond that point, as the effect of any further decrease in temperature is more than offset by the increased cost of cooling. Some manufacturers have gone too far in one direction, and some

in the other, and each purchaser should carefully examine the proposals made to him to see that he secures the happy medium which must be maintained for greatest economy of operation.

Intercoolers are practically all designed to make use of water as the cooling medium, although in some few cases other means have been tried. The water is usually conducted through a series of tubes, and the air is brought in contact with the surface of these. The more perfect the contact of the air with the tubes, the greater will be the cooling effect. The accompanying engraving shows the intercoolers used in connection with the air compressors of the Allis-Chalmers Company, Milwaukee, Wis. These are made with cast iron heads, and shells of either cast iron or wrought steel, depending on the size and pressure. The tube sheets are of thick steel plate, into which are expanded tubes of the best quality of brass, which is a better conductor of heat than other available materials. One of the tube sheets is stationary, while the other is free to move in the shell, thus providing for any expansion which may occur due to changes in temperature. Two baffle walls are provided for directing the passage of the air, and the water makes four passes through the cooler.



Sectional View of an Allis-Chalmers Intercooler for Use with a Multi-Stage Air Compressor.

The direction of the flow of both the air and water is indicated by the arrows. It will be observed that a combination of the counter flow and the cross flow principles has been used. This, it is claimed, brings the air most intimately into contact with the tubes and accomplishes the greatest cooling effect with the smallest possible quantity of cooling water. The flow of the air across the cooling tubes tends to prevent the formation of a layer of air next to the tubes, which will act as an insulating medium. By admitting the air near the water discharge outlet and removing it near the admission point of the water, the most effective results are obtained, and the air issues at as low a temperature as it is practicable to secure.

Besides increasing the efficiency of the compressor, intercooling reduces the moisture content of the air and assists in preventing the freezing of pipe lines and tools, which sometimes occurs where no such precaution is taken. Sometimes and aftercooler is used solely for the latter purpose. As air is compressed, the dew point, or temperature at which the air becomes saturated with moisture, rises. Consequently, any cooling of the air below this point will remove a corresponding amount of moisture, and this moisture falls to the bottom of the intercooler in the shape of rain. In the type shown, careful provision is made for removing this water as rapidly as it falls, so that there will be no interference with the passage of the air.

No attempt has been made here to do more than point out some of the practical considerations that have to do with intercooling. A theoretical study of the action on the air would be useful only with a similar review of the entire installation made in some specific case; but for those who, from the standpoint of operating costs, have a practical interest in the subject, such an investigation in detail will be well worth while. Although a special type of intercooler has been illustrated and described, the points brought out above are, of course, applicable where any standard design of compressor is used.

An Exhibit Hall for Accident Prevention.

An exhibit hall for devices to prevent accidents has just been engaged in the Engineering Societies Building, 29 West Thirty-ninth street, New York, by the American Museum of Safety. This will constitute a permanent exhibition, free to the public, of safe-guarded machines in operation, models, charts and photographs. Exhibits must be approved by the Board of Approval of Exhibits, which consists of Prof. F. R. Hutton, Philip T. Dodge, Charles Kirchhoff, T. C. Martin and Wm. H. Tolman. There is no charge for space, but a plan of each installation must be submitted in advance to Director Tolman. Each exhibit will be accepted as a loan for one year, then to be replaced by others if substantial improvements have been made. All makers and inventors of safety devices, in the threefold aspect of safety for the worker, the public and the machine, are invited to exhibit.

The April issue of *Safety*, the bulletin of the association, describes with illustrations a safe-guarded planer for woodworking shops. It is found in all the German Museums of Safety, and is found in more than 5000 shops in Germany, where its use has been made compulsory. At the Lodge & Shipley Machine Tool Company in Cincinnati the use of this device has prevented one accident, this alone paying the cost of the safety device, while the workman kept his fingers. With the circular cutter head the entire space between the tables is filled, so that in case the hands do slip nothing more serious than a gouging of the ends of the fingers results.

The United Engineering & Foundry Company has placed a contract with the Shaw Electric Crane Company, Muskegon, Mich., for five cranes to be installed at the Oak street plant, Youngstown, Ohio, where extensive additions are being made. The order comprises one 10-ton, two 15-ton, one 25-ton and one 30-ton.

MACHINE SHOP LIGHTING.

A Study of General Shop Illumination and the Local Lighting of Machines.

BY E. B. ROWE.

When one considers the number of working hours per year in which production is dependent either wholly or in part on artificial light, it is not surprising that superintendents and managers of industrial plants are adopting the higher standard of illumination which prevails in other service. The very little attention which has been given to artificial lighting in industrial plants is doubtless due largely to the lack of efficient lighting accessories. For years the only shades available for incandescent lamps have been the flat and 10-in. cone shades, neither of which did much to shield the eyes of the workmen from the glare of the lamp. A skilled workman's value as a producer is dependent on the tools which he uses, and good light is one tool he cannot dispense with. Since the light is provided primarily for his use, that he may perform his work with maximum efficiency, it follows that it should be suited to his needs. To be satisfactory the illumination should enable the workman to perform his work quickly and accurately without excessive eyestrain.

By making him thoroughly comfortable, and at ease with his surroundings, a man's productive efficiency is doubly increased—the physiological and psychological effect of a cheerful, well lighted space, as compared with a gloomy, dimly lighted room, cannot be questioned for an instant. The necessity then for a good general illumination in shops, even though of relatively low intensity, is at once apparent. With the flaming and intensified arcs now available, and particularly since the advent of the tungsten lamp, it is possible to secure the required illumination, of almost daylight quality, at even reduced cost of current, as compared with the inefficient and costly installations of the past.

General Illumination.

For many classes of industrial service the high candlepower tungsten incandescent lamps, equipped with prismatic or properly designed metal reflectors, are admirably adapted because of their steadiness, white light, efficiency, simplicity and low cost of operation. Glass and steel reflectors giving several distinct types of light distribution have been designed especially for use with tungsten lamps of the various sizes now on the market, and by selecting the proper reflector, as determined by the hight or spacing of the lamps, an illumination of the required intensity and uniformity can be obtained.

Fig. 1.—View in a Machine Shop, Showing General Illumination from 100-Watt Tungsten Lamps with Holophane Intensive Reflectors.

Fig. 1 is a photograph of an installation of intensive reflectors made by the Holophane Company, 227 Fulton street, New York City, and 100-watt tungsten lamps in a machine shop, and the illumination from this equipment has, it is said, proved thoroughly satisfactory. It will be noticed that the light units are suspended on a short length of drop cord to take up vibration, which in this instance is considerable, as the shafting and belting is supported from the roof trusses to which the wiring is also directly attached. The drop cords are in a state of constant motion, which is plainly visible from the floor, and yet the tension is so nicely adjusted that the lamps are not subjected to destructive jarring, and consequently in five months' operation only one lamp has been replaced.

Local Lighting.

While always of great importance, general illumination, particularly in machine shops, is not so vital as the local lighting of each machine. Here direction is often as important as intensity. For example, a bare lamp hung over the back of a lathe is not particularly satisfactory if the inside of a cylinder is being turned. In the latter case the light must be thrown from the tail end of the lathe at a low angle, and yet the lamp must not be in the machinist's way.

Fig. 2.—Lathe Lighting with an Outside Balance Socket and a Steel Reflector.

Fig. 2 illustrates a special socket and reflector which will satisfactorily meet all such requirements. In the position shown the light is thrown strongly downward, while for boring or similar inside work it is simply necessary to lengthen the drop cord on the adjuster and stand the lamp on the most convenient part of the machine, preferably the carriage, using the flat plate shown at the right of the socket as a rest.

It was stated above that a skilled workman's value as a producer is dependent on the tools which he uses. In the case of a machinist, this means properly sharpened tools, and hence the lighting of the emery wheel is of considerable importance. The light unit must be placed so that not only the face of the wheel, but both edges near the face, can be properly lighted. Fig. 3 shows one method of lighting an emery wheel which is a considerable improvement over the equipment generally used for this purpose. An 8-candle power lamp is used, equipped with a Holophane steel reflector of the parabola type, with the extension holder, which brings the lamp in such a position in the reflector that extreme concentration of the light is obtained. To secure the proper lighting of the two faces of the wheel, this machine was equipped with an upright iron rod, plainly visible in the engraving directly under the lamp, and at the top of this upright a short horizontal arm was attached, so that a little lateral movement could be ob-

Fig. 3.—Correct Lighting of an Emery Wheel.

Fig. 4.—Good Bench Lighting.

tained, thereby enabling the light to be thrown on either face as desired.

Decreased Expense.

The saving in current consumption from this equipment is also an item to be considered. With the probable increase in effective illumination of several hundred per cent. secured from this equipment as compared with a bare 16-candle power lamp, a decrease in energy consumption of exactly 50 per cent. is secured by using an 8-candle power carbon lamp. Under certain conditions a 4-candle power lamp would give all the light needed, in which case the reduction in current cost would be 75 per cent.

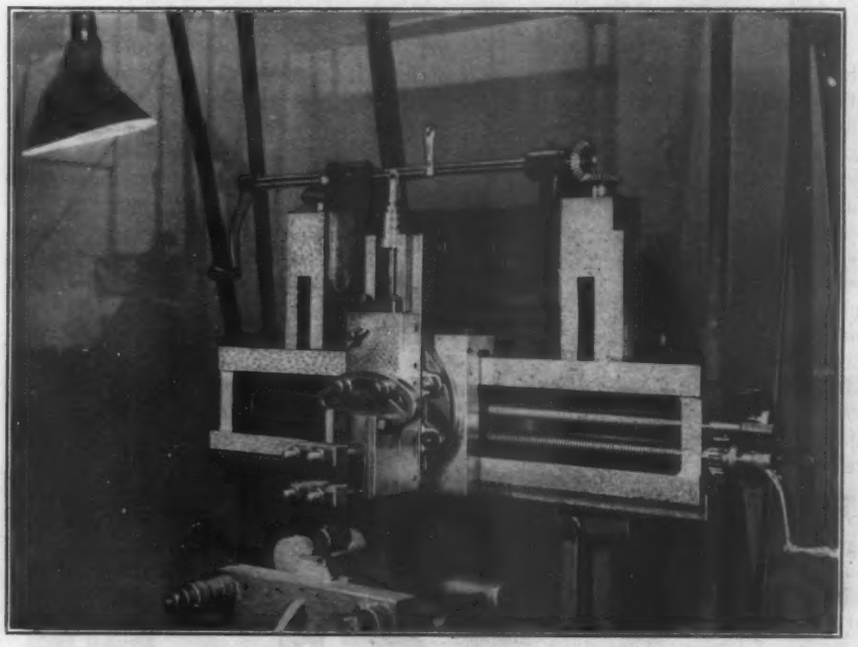


Fig. 5.—Good Illumination of a Planer at Low Cost.

This same increase in illumination and saving in current can be effected in a multitude of ways in machine shop lighting. For example, Fig. 4 illustrates a simple home made adjustable arm used for bench work. In this instance the extension cord is tied to the end of the arm, and while purely a makeshift it is none the less satisfactory. The lighting equipment shown in the illustration consists of a 16-candle power lamp in a Holophane steel reflector, which is similar to the one shown in Fig. 3, except that the holder is attached in such a way that the reflector hangs at an angle of 15 degrees from the vertical, throwing out the strongly concentrated beam of light at a corresponding angle from the vertical. This enables the lamp to be placed back of the work, so that it is not in the workman's way, and yet throw the maximum amount of light on the work. The remarkable concentration which this reflector gives is clearly shown in the illustration, in which the only spot which is strongly lighted is the casting.

A Particular Problem.

One of the hardest machines to light correctly is the planer. The requirements here are twofold: first, in setting up the work, and, secondly, at the cutting tool. In setting up, the work is properly aligned and fastened on the end of the carriage at quite some distance from the tool holder, and this part of the work requires a relatively high intensity, as on the accuracy of the setting up and marking depends, to a large extent, the quality of the finished piece. Fig. 5 shows one method of lighting both the bed of the planer and the cutting tool from one unit. The remarkably good illumination shown in the engraving is obtained from a steel reflector and 40-watt tungsten lamp. This equipment is plainly visible in the upper left corner of the illustration, and it is to be noticed that it is placed at some distance from the floor, being between 5 and 6 ft. high. It is thus entirely out of the way and not in any danger of rough handling, which would be destructive to the tungsten lamp, particularly when it is not lighted, as the cold filament is much more fragile than when in a state of incandescence. When one stops to consider that the cost of this lamp per hour is ap-

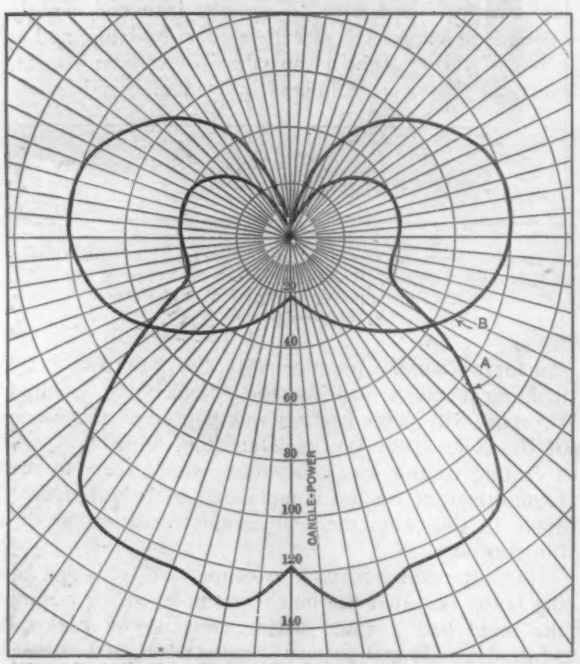


Fig. 6.—Light Distribution About a 100-Watt Tungsten Lamp Alone and with a Holophane Intensive Glass Reflector.

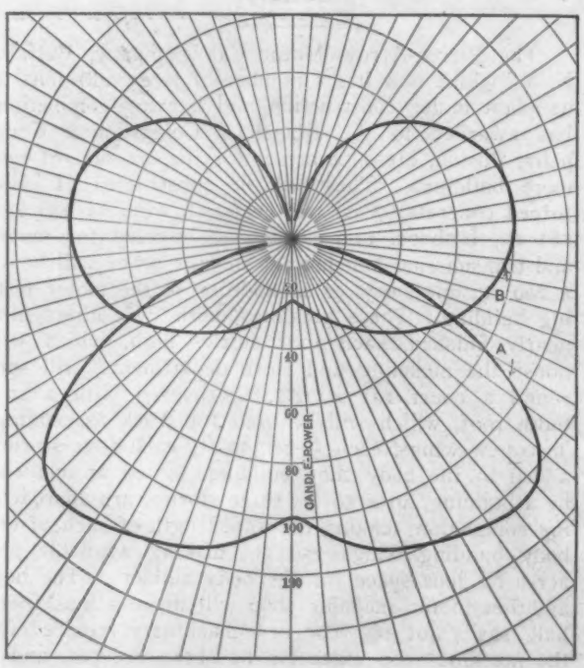


Fig. 7.—Light Distribution About a 100-Watt Tungsten Lamp Alone and with a Holophane Intensive Steel Reflector.

proximately 30 per cent. less than the ordinary 16 candle power carbon filament lamp, the high intensity obtained on the work is truly remarkable, and is strong evidence, not only of the high efficiency of the tungsten lamp, but of the reflector as well.

Distribution of Illumination.

Figs. 6 and 7 show the variation in candle power at different angles in the vertical plane about a 100-watt bowl-frosted tungsten lamp equipped respectively with high efficiency Holophane intensive glass and steel reflectors. The glass reflector is designed to transmit a small part of the light above the horizontal to illuminate the upper side walls and ceilings, while with the opaque steel reflectors, although no light is given out above the horizontal, a fair amount of ceiling illumination is secured through diffuse reflection from floor, machinery, &c., a result which is usually not anticipated with metal reflectors that cover the lamp.

Glancing over the illustrations again, both those showing the local lighting of machines and the general illumination of the shops, one feature seems to stand out prominently, and that is the efficient utilization of the light generated by the lamps. It is very often the case that to gain something desired, something else, perhaps equally desired, must be sacrificed. In this case, however, the increased efficiency secured by the use of proper reflectors does not call for any sacrifice, but, on the other hand, gains something equally desirable, the total elimination of glare, and in the case of the general lighting, well diffused general illumination of good intensity and uniformity, with the light units placed well out of the range of vision. The result, therefore, is a cheerful shop, contented workmen, maximum output of the best quality, and all secured at probably less running and maintenance cost for lighting equipment than would be the case with inefficient equipment installed without any regard to the results required.

Enlargement of the Pierce-Arrow Plant at Buffalo.

The Pierce-Arrow Motor Car Company, Buffalo, N. Y., which now has a number of large additions to its plant under construction and nearing completion, has awarded to the Aberthaw Construction Company, Boston, Mass., contract for the erection of two more buildings. They will be constructed of reinforced concrete. One will be 60 ft. wide by 248 and 181 ft., L-shape, four stories, to be used for motor and transmission assembling, and the other will be 55 x 200 ft., one story, as an addition to the motor testing building. These buildings, with two others now nearly finished, each four stories high, which will house the nickeling and store departments, will surround a court 121 x 188 ft., covered with a saw tooth roof, which will be used for truck assembling. Two new wings, each 50 x 350 ft., each four stories, added to the body shop building, joined at one end by a building, 40 x 50 ft., three stories, are approaching completion, making the total length of each of the body building wings 750 ft., making available 7½ acres of floor space for the body builders. The new addition to the machine shop will make a machinery hall, 122 x 401 ft. The new machinery required for the machine shop extension has been ordered, and a large portion of it is in place.

The company will also add to its plant a special building for the manufacture of the Pierce-Arrow motor truck, a heavy load high powered commercial truck which has been thoroughly tested during the past two years, and its manufacture upon a large scale has now been commenced. This building will be 184 x 300 ft., four stories, of reinforced concrete, and a large amount of new machinery will be required for its equipment. An addition to the power house, 50 x 51 ft., is nearly completed, and the boiler capacity will be increased by 2000 hp., and the engine capacity by 1000 hp. A further improvement will be the extension of the office building by an addition, 68 x 220 ft., three stories, of brick concrete and terra cotta, to conform to the present office or administration building, and which will double its size. When the additions are completed the company will have over 1,000,000 sq. ft. of floor space, or 23 acres, under roof. The office building addition, besides doubling the accommodations for the clerical force, will largely increase the dining-room and kitchen capacity, providing seating for about 2000, with locker and toilet facilities, reading rooms, &c. The working force of the company will be increased to about 4000 men.

A Large Machine-Molded Casting.

The large casting shown in the accompanying illustration is one of the somewhat remarkable results obtained in foundry practice with the Norcross jarring molding machine made by the Arcade Mfg. Company, Freeport, Ill. This casting was poured at the foundry of the Niles Tool Works, Hamilton, Ohio, and, while a casting of this size and shape would seem to many foundrymen to be too complicated to be satisfactorily made in this way, the photograph furnishes proof to the contrary.

A Casting Made at the Niles Tool Works, Hamilton, Ohio, the Mold for Which Was Rammed by a Norcross Jarring Molding Machine. The Mold and Pattern Weighed 21,850 Lb.

An interesting feature in connection with this casting is the fact that the machine employed for ramming the mold had a rated lifting capacity of 12,000 lb., while the mold and pattern complete weighed 21,850 lb. By speeding up the air compressor, however, the operator was able to accomplish the completion of a perfect mold in about one-quarter of the time required to make a similar one by hand.

The headquarters of the Engineers' Society of Western Pennsylvania have been removed from the Fulton Building to 2511 Henry W. Oliver Building, Sixth avenue and Smithfield street, Pittsburgh.

THE HIGH COST OF LIVING.*

The Consumption of Foodstuffs Overtaking the Production—Farmers Should Be Roused to the Country's Necessities.

BY W. C. BROWN, PRESIDENT OF THE NEW YORK CENTRAL.

From every quarter and from every department of business activity of the nation there have been coming during the past six months protests against and anxious inquiry as to the cause of the disturbing increase in the cost of those things that are recognized as the prime necessities of life, those things that the richest and poorest must have in order to live.

Congress has suggested investigation. The Department of Agriculture is conducting an examination, trying by analyzing the elements which, from the producer to the consumer, make up the ultimate cost, to ascertain whether or not undue or unreasonable profit is being exacted by any one. Great movements are being inaugurated by labor unions to secure increased compensation, and the ground upon which these demands or requests are based is the increased cost of living.

The Folly of the Meat Boycott.

Some person started the unspeakable folly of the meat boycott; it was caught up and headlined in the papers, and for a short time, like all similar hysteria, it spread like wildfire. A reference to the report of the Department of Agriculture would have shown that on January 1, 1910, there were on the nation's farms between 10,000,000 and 11,000,000 less meat producing animals than there were a year before, and a glance at the report of the Commissioner of Labor would have disclosed the fact that there were several millions more men steadily employed and able to buy meat in January, 1910, than in January, 1909. The result was inevitable; it was just as certain and as simple as that two and two make four, and that result was a material increase in price.

An analysis of the increase in cost of those things which go to make up the cost of living will show that almost every increase is the result of the application of the law of supply and demand, and the more comprehensive the investigation and analysis the more clearly this fact will be brought out. Comparing the year 1909 with 1899 gives the following facts as to agricultural products of this country:

	Per cent.
Acreage, increased	23
Production, increased	36
Consumption, increased	60

Do not these statistics show a present economic problem of the gravest possible character and foreshadow a dangerous economic crisis in the not distant future?

Foodstuffs Have Advanced Much More Than Other Commodities.

A comparison of the increase in the cost of foodstuffs produced on the farms of the country with the increase of all commodities is interesting and exceedingly illuminating in this connection. George R. Holmes of the Department of Agriculture shows that, with an increase of 23 per cent. in the cost of all commodities produced in this country, the products of the farm have increased in cost 87 per cent., indicating that the failure to increase the product of our farms in anything like the ratio of increase in consumption is exerting more than three times the effect upon the cost of living of all other causes combined. A few comparisons will throw a powerful sidelight upon this situation:

The price of wheat in 1909, as compared with 1899, shows an increase of 69 per cent.; corn, 97 per cent., and oats, 63 per cent.; while the barb wire used for fences shows a decrease during the same period of 27½ per cent., and the binding twine used by the farmer in harvesting his wheat and oats costs 30 per cent. less than it did 10 years ago. The plow he uses costs the same, and the binder, mower, rake and tedder cost only about 3¾ per cent. more for a much better machine.

The farmer receives an average price for butter, eggs, milk and cream 54 per cent. higher than 10 years ago, but he buys a first-class cream separator 40 per cent. cheaper than he did then.

Salt, used in large quantities on the farm in the dairy and packing houses, shows a decrease in price of 4 per cent., while hams sell for 31 per cent. and bacon for 99 per cent. more than 10 years ago.

Broadly stated, the great increase in the cost of living is caused by the simple economic fact that consumption is rapidly overtaking production, and a careful analysis of the increased price of farm products, as compared with the increase in price of the products of manufacture, will suggest the wondering inquiry how it has been possible to make the reductions or to maintain the unchanged or slightly increased prices of the latter, while the prices of the former have been moving upward so rapidly.

These figures show conclusively that, in spite of the fact that the great increase in cost of these prime necessities of life has increased the cost of labor more on the average than 33 per cent., these great manufacturing companies, many of which are represented here to-night, have been able, by economy in administration, operation and cost of distribution, to keep their prices down substantially to the level of 10 years ago. Furthermore, by these same economies, these concerns are year by year increasing their sales in foreign lands, offsetting in great measure the loss of our exports of foodstuffs, which are rapidly diminishing to the vanishing point.

Exports of Manufactures Increase While Foodstuffs Decrease.

No more accurate measure of fundamental prosperity can be found than that an individual or a nation produces and sells more than he or it buys—that the aggregate of all transactions results in bringing money in rather than paying money out; and here occurs another sharp and significant contrast between the products of agriculture and those of mining and manufacture.

In 1899 we exported something more than 470,000,000 bushels of cereals, while last year, with a crop yield of 1,000,000,000 bushels more than 10 years previously, we exported 300,000,000 bushels less than in that year, or a decrease in our exports during this time of nearly 60 per cent. Our exports of live stock and dressed meats show a similarly startling decrease. Coincident with this falling off in our agricultural exports, we imported last year over 8,000,000 bushels of potatoes and more than $10,000,000 worth of oats and beans, and during the latter part of January of this year, notwithstanding a duty of 25 cents a bushel, we came within one-half of 1 cent per bushel of importing wheat from England. Summarized, the value of foodstuffs exported decreased more than $99,500,000, as compared with 1899, while the imports of foodstuffs increased almost $107,000,000.

Including in the computation the decrease in ex-

* Address before the National Metal Trades Association, New York, April 13, 1910.

ports and the increase in imports, the country showed a loss of more than $206,000,000 in its international trade in foodstuffs during the year 1909. With this startling loss in our exports of the products of agriculture, what has been the record made by manufacturing and merchandising concerns during the same period in maintaining a balance of trade in favor of this country? Our exports of manufactured products for 1909 show an increase over 1899 as follows: Agricultural implements, $12,500,000; iron and steel products, $60,000,000; crude petroleum, $2,000,000, or 33 per cent.; refined kerosene, $50,000,000, or 94 per cent.; leather manufactures, $19,500,000, or 83 per cent., and copper and its products, $50,000,000, or 134 per cent.

If the same relative loss in exports had taken place in the products of our great industrial corporations as in the case of our agricultural exports, this country, in 1909, would have become a debtor nation in the markets of the world, after having maintained a continuous credit balance for more than 35 years. The question, then, is essentially an economic one—a question of the gravest importance, to which should be directed the most mature wisdom, conservative judgment and untiring energy of the most constructive, progressive minds of the nation.

How Other Nations Have Met the Same Question.

In this economic evolution we are not following an untrodden path. Other nations have been confronted with the same great question, "How shall we be fed, and wherewithal shall we be clothed?" and upon the wisdom with which the question has been solved has hung the fate of those nations.

More than a century ago the production of wheat in Great Britain had gone down to about the average of this country to-day—namely, a fraction less than 14 bushels per acre. A royal commission was appointed, which has been in continual active existence ever since. The yield of wheat was gradually brought up to 32 bushels per acre, and at that figure it is maintained year after year.

The story of this campaign for improved agriculture in England is exceedingly interesting and, in the present juncture, of profound importance to this country. The islands of the sea have been swept clean of their rich stores of guano, the accumulation of ages. Phosphates have been imported by the millions of dollars' worth from the United States. The battlefields of Europe were combed, the catacombs of Egypt rifled, and for years the bones of 3,000,000 men were ground up annually and used to bring the soil of England back to its present fertility.

Approximately $5,000,000 worth of our phosphates are being exported each year. In some way this should be stopped. In the years to come this master fertilizer will be worth more than gold. I believe it is well within bounds of conservatism to say that long before the middle of the present century the phosphates which we export annually, and for which we receive $5,000,000, will be worth $500,000,000 for fertilizing our own land.

An Alarm Should Be Sounded Arousing the Farmers

The seriousness of the situation cannot be overstated. An alarm should be sounded from the Atlantic to the Pacific, and from our northern boundaries to the Gulf, arousing the farmers to the country's necessities, to their own opportunities and possibilities. Experimental farms should be established in every county of every State, where the most modern methods of fertilization and cultivation and the result of such methods can be demonstrated, and where every farmer in the county can see exactly how it is done, instead of being told in books or lectures how it can be done.

I have called attention to the fact of our rapidly diminishing exports and increasing imports of food products. A most careful investigation of statistics shows beyond the shadow of doubt that, unless production can be immediately and powerfully stimulated, within five years the consumption of foodstuffs in this country shall have overtaken production; the last vessel loaded with the exports of the nation's farms shall have left our shores; the great grain exporting elevators in our Atlantic and Pacific ocean ports shall stand empty and idle; and this great agricultural nation, like the nations of the Old World, shall be looking with anxious eyes for a place to purchase the necessaries of life.

These facts, the conditions which they disclose, would, without some qualification or explanation, be regarded as a severe criticism of the farmers of the country. Nothing is further from my mind. My boyhood was spent among the farmers on the Western frontier. I know of their hardships and privations, their struggles, heroic as any history records, against obstacles and discouragements, scantily appreciated by the generation that has followed them.

In the light of present high prices of farm products, the abandoned and impoverished farms of the Eastern States and the half cultivated farms of the West seem utterly incomprehensible and inexcusable. But let us take a look backward only a few years and these things will not seem so strange. From the earliest settlement in New England and the development of that fringe of population along the Atlantic Coast, until within the past 10 years vast areas of the most fertile lands in the world, located just a little further west, have constantly beckoned to the farmers of the East, and thousands have responded to the call.

How the Development of the West Led to Improvidence.

The marvelous extension and development of railroads through the Middle West during the 10 years following the close of the Civil War, opening up and making easily accessible empires of this rich land, marvelously stimulated emigration, and each new railroad, each extension of existing railroads, was followed by the location of thousands of settlers and the opening up and cultivation of millions of acres of new land. The result that followed was inevitable. The products of the nation's farms soon so far exceeded the demand for them that prices fell far below the bare cost of production. I have seen as good corn as the States of Iowa, Kansas and Nebraska ever grew sell for 10 to 12 cents per bushel, and it was a drug on the market at the price. I have seen this corn burned for fuel on the farm, because it was cheaper than wood or coal.

Is it strange that such conditions resulted in a ruinous collapse in farm values in Pennsylvania, New York and New England, or that they begot methods or habits of unthrift and improvidence in the cultivation of the soil in the West? Fifty-one years ago, in an address delivered before the Wisconsin State Agricultural Society, Abraham Lincoln said:

> What would be the effect upon the farming interests to push the soil up to something near its full capacity? Unquestionably it will take more labor to product 50 bushels from one acre than it will to produce 10 bushels from the same acre, but will it take more labor to product 50 bushels from one acre than from five? If it should require just as much to the bushel, there are some probable, and several certain, advantages in favor of thorough practice. It is probable it would develop those unknown causes, which of late years have cut down our crops below their former averages.
>
> Population must increase rapidly, more rapidly than in former times, and ere long the most valuable of all arts will be the art of deriving a comfortable subsistence from the smallest area of soil. No community whose every member possesses this art can ever be the victim of oppression in any of its forms. Such community will be alike independent of crowned kings, money kings and land kings.

These words of Mr. Lincoln could not have appealed very strongly to the farmers of Wisconsin or the neighboring States when land and its products were

about the cheapest thing in which men dealt. Fifty years later this admonition, under the changed conditions, comes with the force and significance of prophecy, because it applies now to a vital, burning question in which lie the issues of national life or death.

When these words were spoken, and for 30 years following, production exceeded consumption, and there was a steady, continuous, heartbreaking decline in the values of the thing produced. Then the choice between the expense and work of maintaining the fertility of the soil in the older States, or opening up and cultivating the rich virgin soil in the West, was a legitimate one. Now, no such choice is possible. The vacant land is practically all occupied. The day of the settler and the homesteader has passed. Increased consumption can no longer be provided for by multiplying acres.

Production Must Be Increased by More Intelligent Methods.

There is no alternative—we must increase production per acre by more intelligent methods, or we must face the relentless, certain coming of the day when we shall produce food enough to supply our own necessities.

For the year just closed the product of the nation's farms approximated $9,000,000 in value. No man who has made this subject a study doubts that this could be doubled without increase of acreage.

James J. Hill, in a recent article published in *World's Work*, in speaking of the importance of this campaign of better agricultural methods, said:

> The man who assumes to be the farmer's friend, or who holds his interests dear, will constitute himself a missionary of the new dispensation. It is an act of patriotic service to the country. It is a contribution to the welfare of all humanity. It will strengthen the pillars of a government that must otherwise be endangered by some popular upheaval when the land can no longer sustain the population that its bosom bears. Here lies the true secret of our anxious interest in agricultural methods, because, in the long run, they mean life or death to future millions who are no strangers or invaders, but who are our own children's children, and who will pass judgment upon us according to what we have made of the world in which their lot is to be cast.

Is it possible to exaggerate, to magnify the importance of this subject? Can the imagination conceive of a duty of higher, broader patriotism, or one that involves more far-reaching comprehensive philanthropy? The time will come when the last ounce of gold and silver shall have been taken from the earth, the last coal mine shall be nothing but an empty hole in the ground. The fertility of the soil, however, cannot only be maintained, but it can be constantly augmented—and it must be, if the nations of the earth are to continue to exist.

Science has taught us that the vast water powers can be harnessed to garner from them light, heat and power, but no substitute has been devised for the sustenance drawn by humanity from the bosom of mother earth since the dawn of creation. We may be wasteful and improvident in everything else, but the land "belongs to the ages." It is ours for the brief period which marks the passing of a generation. We are only temporary trustees for generations yet unborn, and the happiness and comfort, yea, the very existence of millions who will follow us, depend upon the unselfish, clear visioned wisdom with which we discharge the sacred trust.

THE FIRST SOFT BESSEMER STEEL BARS.

Who Made Them and Who Sold the First Carload.

BY T. S. CASEY, CHICAGO.

I think well of the attempt to establish the facts as to when and where the first soft Bessemer steel bars and plates were made, and, as I have an indisputable right to make a statement, am pleased to go on record.

The Riverside Iron Works First Makes Steel Cut Nails.

In 1883 the long strike of puddlers engaged in the nail business inspired the Riverside Iron Works, Wheeling, W. Va., a leading maker of cut nails from puddled iron, to build a Bessemer steel plant, for the purpose of eliminating one of the causes of labor troubles. It was also foreseen that the time was fast approaching when for other reasons it would be desirable to be in a position to make steel instead of iron cut nails. The factory was put in operation in 1884, and steel cut nails had their beginning in that year—and made, of course, from Bessemer steel nail plate. They were the first steel nails ever made, and on their appearance the tocsin was sounded for a united effort upon the part of makers of iron cut nails to discredit the steel product. Persistent efforts, however, prevailed, and in the latter part of the year an order for 5000 kegs of Bessemer steel cut nails, Blue brand, was placed by the Wells & Nellegar Company, Chicago.

When these steel nails were first put on the market by the Riverside Iron Works it was done in a very small way, mostly in keg lots. On one trip of 60 days, orders for 14 kegs resulted. The next trip, through the Middle West, brought better results, and 60 kegs were solds in 43 days. The third canvass resulted in an order for a carload. This order was given also by the Wells & Nellegar Company, which makes that company really the first large dealer to recognize the new departure. The activities of the mill in advertising and sending out small samples, together with the efforts of the writer, resulted in this instance in inducing J. B. Nellegar to give the order for a whole car. It was largely brought about because I had concentrated my efforts on his firm, having arranged with a large number of people throughout the Western country to send inquiries there for a price on steel nails. The Wells & Nellegar Company finally took notice and placed the order. That company is now out of business, but either of the principal members can be reached if verification is desired.

Riverside Soft Steel Bars Begin to Be Made.

While the steel plant was built for the purpose of making nails, the Riverside Iron Works also had a bar mill, which I used to call a hand mill, because it was of such small capacity. Be that as it may, the company made up some of the steel in bars suitable for use in its own plant, and these bars gave such good satisfaction that it was decided to branch out and offer the material to the trade in general. The writer was again a factor in the introducing and selling of Bessemer steel bars. The first carload ever sold was sold by me in the summer of 1884. This carload was sold also to a Chicago concern, the Reedy Elevator Company, which was then, as now, a large consumer of that class of material.

In connection with this order I had a funny experience. The carload was delivered; a test was made that proved unsatisfactory, and the mill was informed that the material was not suitable and that it was re-

jected. The writer was in the West at the time, and a message from the mill instructed me to go to Chicago and ascertain the cause of the rejection. Mr. Reedy put me in charge of the superintendent. We went to the shop and saw the result of the work done on the steel bars. I asked, "How did you work this material?" His reply was, "We used the same process in the work as if it were steel," which was the process then in vogue in the shop on tool steel. I may say here that, not being informed as to the proper method of working soft steel, it has always seemed singular to me that the mill did not send an expert to show the consumer how to use it. It occurred to me, however, that if the workmen could not get satisfactory results with it, handling it as they would tool steel, it was possible to do so by

Working It as They Would Iron,

and so stated to the superintendent. My suggestion was adopted and the soft steel worked to a charm. It was paid for, and additional orders were sent to the factory. We never had any more trouble with our soft steel bars, because instructions were then given to each purchaser to work it as he would iron. Quite a number of people in various branches of manufacture bought some of the material as an experiment, and some of it was sold to take the place of Norway iron, which the buyers were assured that it would do perfectly well. Others, again, bought some of the steel for horseshoes, so that the first Bessemer steel horseshoe made was out of Riverside soft steel.

The mill having only a limited capacity, the company was not prepared to make sizes that could be used by large consumers, and an investigation of that subject was made by the writer, together with John D. Culbertson, secretary and treasurer of the company. Several large manufacturing establishments were visited and their wants ascertained, with a view of turning up rolls suitable for making bars and other shapes required by them. It was concluded that the requirements were too great for the company's facilities, as it would be necessary to furnish so many sizes. As the result of the introduction of Bessemer soft steel other large rolling mills undertook the manufacture of it, and soon the demand was of such a character that they went into it heavily, so much so that the original mill ceased to manufacture it altogether. The company dismantled the bar plant and turned its attention to the manufacture of steel pipe, which it began to make in August, 1888; but that is another story. Suffice it to say that the Riverside Iron Works was the first maker of Bessemer steel bar in the lower carbons—what is called soft steel.

In an interview with the late E. P. Allis of Milwaukee during the early days of Bessemer steel bars he was shown some of the advantages that would accrue to its use in a large way. He was so thoroughly impressed with the importance of it, and was so sure of his ground, that he gave me an order for 400 tons of 1⅛-in. round, to be used for shafting or other purposes. This order was filled promptly and orders for additional quantities were forthcoming. This order established the first cut in the Amalgamated scale for rolling this size, no extra being paid in its manufacture, and it finally did away with the extra for rolling steel.

Credit to Frank J. Hearne.

The late Frank J. Hearne was the leading factor in the manufacture of Bessemer soft steel, as above narrated. He was general manager of the Riverside Iron Works at the time, and was an enthusiastic advocate of the new departure. After the Bessemer plant had been put in operation, and the fact was established that Bessemer steel could be successfully put to general use, he was the hero of the hour, but bore his honors with that modesty characteristic of him. He stated that in case the new product had proved a failure he would have left the country, and nobody would have heard from him again. His whole life depended on its success. The glory of his achievement lives after him, and as time passes he will yet be hailed as one of the greatest, if not the greatest, men of his era in the manufacture of Bessemer steel, outside of rails.

At the time under consideration the following men were the officers of the company: J. N. Vance, president; J. D. Culbertson, secretary and treasurer, and Frank J. Hearne, general manager. All were supported in their efforts to better the condition then prevailing in the iron business by the late W. L. Hearne, than whom it would be hard to find a man of more mature judgment, greater sincerity or a finer type of the old school.

The writer claims no credit now and did not then. Yet after the successful campaign made as a salesman in introducing soft Bessemer steel I may be pardoned for thinking that a word of commendation would have been a gracious thing to give, but corporations do not take notice and individuals do not have the time. During all my connection of 25 years with the Riverside Iron Works, I was never questioned as to why I did this or that. The managers of the company seemed to have the utmost confidence in my judgment, and I always appreciated it and did the very best that I could.

A Buyers' Club to Be Organized.

A number of purchasing agents for large manufacturing interests are planning for the organization of a buyers' club, which is to be national in its scope. H. E. Gilman, purchasing agent for the American & British Mfg. Company, Bridgeport, Conn., is at the head of the movement, and a number of other prominent purchasing men are associated with him. Every person connected with the purchasing of material for any firm engaged in the mechanical or metal industries throughout America will be eligible to membership. The organizers state that the main object of the club will be to bring closer together those interested in purchasing affairs. Monthly or bi-monthly meetings will be held at which papers of interest will be read on subjects pertaining to the purchasing of material and the manner in which requisitions should be handled. Another object of the club will be for the general betterment of the purchasing end of industrial companies, but the organization will not in any way consider the amalgamation of orders. Steps are now being taken to incorporate, and the organizers propose to secure the top floor of some centrally located hotel in New York and equip it with the conveniences of an up to date club. The movement has attracted interest among purchasing men and a large number have signified their willingness to enroll.

The Lake Superior Corporation to Extend Algoma Central.—A special meeting of the stockholders of the Lake Superior Corporation will be held at Camden, N. J., May 6, to vote on the proposition to issue $3,500,000 of bonds of the Algoma Central Railroad Company, a subsidiary, to complete the railroad to connect with the main line of the Canadian Pacific. President Drummond says that the completion of the Algoma Central from Sault Ste. Marie to Josephine Junction, and then to Hobon, on the Canadian Pacific, will make available proved deposits of iron ore, so that in a short time the corporation will be independent of the iron ore market. The building of this additional road will also conserve valuable land grants. The corporation would then not be dependent as at present upon water traffic facilities. The new construction at the steel plant at Sault Ste. Marie, Ontario, will result in a considerable increase in output and in economies. The rail mill now has orders which will occupy it for months. A contract was made recently by the Canadian Pacific Railway Company for about 100,000 tons of rails.

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GEO. W. COPE, - - - - - - - - } EDITORS
A. I. FINDLEY, - - - - - - - - }
H. R. COBLEIGH, - - - - - - - MECHANICAL EDITOR

Real Progress in Voluntary Compensation for Industrial Accidents.

The past week has been one of important developments in the problem of employers' liability and workmen's compensation for accidents. Chief of these are the announcements made by the United States Steel Corporation and the International Harvester Company of plans they have adopted by which voluntary payments are to be made as compensation to employees injuered in accidents or to relatives in case of fatal accidents. In the same week hearings have been held by legislative commissions in New York and Wisconsin, in both of which States compulsory methods of dealing with this subject have been reported in the form of bills. A fifth development of importance was the discussion of the matter at the New York convention of the National Metal Trades Association.

Rapid progress has been made in crystallizing sentiment among manufacturers in the United States regarding workmen's compensation. Last year an important association of manufacturers, after receiving the report of a committee which had considered the matter for a year, decided to take no action. There was the sentiment that agitation of the subject might result in bringing forward ill considered proposals adding to manufacturers' burdens without aiding in a broad way in a satisfactory solution of the question. There has been strong dissent from this view, it should be said. Manufacturers who have been forward in the investigation of the subject have urged upon their fellow members in employers' organizations that, refrain as they might from agitation of this question, the legislative and other machinery already in motion was bringing it rapidly to the front as an issue. Moreover, there is a widespread feeling among manufacturers, as expressed at the metal trades convention in New York last week, that they have an obligation in this matter and one which they have no desire to escape.

It is interesting to note that the German plan of compensation has been the basis of the principal proposals now before the four legislative commissions in this country—those of New York, Illinois, Minnesota and Wisconsin. The German plan is also prominently brought forward in the paper of Mr. Dawson, read before the National Metal Trades Association and printed elsewhere in this issue. The Wisconsin legislative commission, whose report is the basis of the hearings of employers, labor unions and insurance companies, which began at Milwaukee April 12, follows in the main the German scale of compensation. It is proposed in Wisconsin to give the workman who loses time through injury 65 per cent. of his wages, and in fatal cases the dependent survivors are to receive three years' wages of the dead man. This is not to be paid as a lump sum, for a number of good reasons, but in weekly installments over a period of five years, though a county judge may order lump payment in certain cases.

The proposal of the New York commission is for disability compensation equal to one-half the average earnings of the injured workman, and in case of fatal accident four years' pay, or one year more than in Wisconsin, but not to exceed $3000. The amount of disability payment is not to exceed $10 a week, nor to extend over more than eight years. The injured person or his representative may take the compensation provided for by the act, or may sue under the general law, but cannot do both. It should be said that the comparatively liberal provisions of the New York bill are to be considered in the light of the fact that it is to be applied in the beginning only to employments in which the risk is considerable—those of dangerous construction, those employing compressed air, explosives or high electric currents, and general railroad work.

It might be expected that compulsory compensation, such as is proposed in Wisconsin and New York, would impose heavier financial burdens upon employers than voluntary plans worked out by the employers themselves. It is interesting to note, therefore, how liberal are the provisions of the two plans announced by large corporations in the past week. While it cannot be said that standards were lacking to those who have long been working on these two schemes, it will be admitted that the experience of Germany and England and other European countries could not be taken as more than suggestive. What is of most significance in the plans of the United States Steel Corporation and the International Harvester Company is that these great corporations, the one having now about 220,000 employees and the other 25,000, have committed themselves to a test which at the best will involve a large outlay in the coming year.

The Harvester Company, as will be seen from the outline of its plan given on another page, will pay three years' wages in cases of death by accident. The Steel Corporation pays one and a half years' wages to the widow and children, with an additional 10 per cent. for each child under 16 and 3 per cent. for each year of service of the deceased above five years. This would mean about two and a half years' pay, for example, where there were six children under 16 and the employee had been in the service of the company eight years. The Steel Corporation similarly graduates the relief granted for disablement. Married men are given 50 per cent. of their wages, with an additional 5 per cent. for each child under 16 and 2 per cent. for each year of service above five years. This would mean full pay in case there were six children under 16 and the employee had been in the company's service 15 years; but $2 a day is the maximum. No relief is paid for the first 10 days of disablement, nor for more than 52 weeks. The Harvester Company gives half pay after 30 days and one-fourth pay in the first 30 days. There is a feature of employees' participation in paying the benefits of the first 30 days, bringing these up to half

pay. It is explained that this contribution by employees will make them financially interested in guarding against accidents. The limit of time for disability benefits is 104 weeks and the maximum amount is $20 a week.

It is not necessary here to go into the thoroughly unsatisfactory state of this question of industrial accidents in the United States in all its phases. Enough has been said about all that, and about contributory negligence, assumed risk and the fellow servant defense which have cut off compensation in thousands of litigated cases. The lack of adequate attention to the safeguarding of life and limb in industrial operations was long a reproach. The awakening of recent years in this respect has been in keeping with other advances in industry. But there have been well understood reasons for the slowness of employers to move in the direction of organized indemnity. Now that the movement has been given such an impetus by the important corporations which have made public their plans in the past week, we may look for the early addition of other large manufacturers to the list of those voluntarily providing accident compensation.

It is natural that large corporations, which for years have carried their own insurance against fire, should take the initiative in accident indemnity; indeed, it may be considered by some manufacturers that such voluntary provisions are practicable only where the number of employees is very large and the operations diversified. That this is not the case is shown by the successful operation of the system introduced by the Cleveland (Ohio) Foundry Company, described in *The Iron Age*. Worthy of particular note also is the system employed by Deere & Co., at Moline, Ill. This company, it is true, employs some thousands of men, but its plants are all in one locality and it is an individual company and not an aggregation of companies.

That the transfer of accident liability to an insurance company is not a satisfactory solution of the question is an opinion steadily gaining ground among manufacturers. Such an arrangement does nothing for the betterment of relations between employers and employees. A mutual association of employers having for its object the systematic handling of accident compensation, as suggested in Mr. Dawson's paper before the National Metal Trades Association, is better on many accounts. But here again the benefits of direct dealing between the company and its men are lost, and it is questionable if an association believed to exist primarily for defense against strikes would be effective as a distributer of relief to unfortunate employees or their families, even through the medium of a separate organization.

What is of great significance in connection with these latest developments is that employers have found a way independent of legislative proposals and altogether apart from the statutory remedies which have so often been vainly invoked in aid of the victims of accident or their unfortunate families. Experience with the plans just announced will be of great value as a guide to the legislative commissions now at work. They will also help other manufacturers who have long been studying the problem to take the first practical step toward its solution. Best of all, they should work strongly for the prevention of industrial accidents, which is the chief end of all study of this problem.

The Concrete Bar Trade.

The use of steel bars for reinforcing concrete is extending so rapidly that the business has become a very important branch of the steel industry. The use of reinforcing bars adds a degree of strength which concrete lacks and thus greatly widens its applicability to construction in something like the way in which carbon in steel opens up a vast field of usefulness which wrought iron alone could not have filled. As usual the development of a new industry brings with it peculiar problems which require time and the united effort of many people to reach a solution.

Reinforced concrete is a manufactured product, but it is made in position in thousands of places throughout the country by people who are influenced more or less by their own theories of the material employed. Important work is executed under specifications prepared by engineers, but there are also thousands of contractors and builders who are following the rule of thumb, and usually with successful results. This spontaneous development of an industry favors its rapid extension, but the diversity of ideas among engineers and contractors has proved embarrassing to the steel mills which are called upon to furnish the bars or reinforcing material.

In the absence of any commonly accepted standard for such bars each engineer feels called upon to exercise his own ingenuity in preparing specifications, and some of them lay down the chemical analysis and the physical properties of the steel to be used. The mills receive many orders in which the engineer calls for a high carbon steel along with the requirement that in the cold bending test a bar shall double over flat. In some cases engineers have provided that the bars should not contain more than 0.04 per cent. of manganese. High carbon bars are ordered to be twisted cold, and again great ingenuity is displayed in devising fingers and toes on a bar with a view to making it take a better hold on the concrete. Perhaps the most common and embarrassing feature of concrete bar specifications is that they shall be rolled in sixteenth-inch sizes, while the bar mills which supply this material prefer to graduate their sizes by one-eighth inch. One small order is often divided into a half dozen sizes, where one standard section would answer all the requirements of the work.

Even among engineers the chief function of steel in concrete is not always appreciated. Concrete often adheres to a surface of iron or steel with a tenacity greater than the tensile strength of the concrete itself; and, while the twisting of bars is sometimes desirable to furnish what is known as a mechanical bond, the chief advantage of twisting is that it increases the elastic limit of soft or medium steel. It is the elastic limit of such bars rather than their ultimate strength that is the feature of first imporance, since the function of a reinforcing bar is performed within the elastic limit. This primary fact in the use of reinforcing steel does not seem to be understood by many who assume to supply the steel mills with technical information regarding the manufacture of bars for this work. Naturally cold twisting is not practicable in the case of high carbon steel, yet specifications often call for it.

It does not seem to be understood that there is little to be gained in prescribing minute variations in the sizes of bars used for reinforcing. Almost any size

of bar that is physically practicable to use would give way under a strain thrown upon it before it will loosen its grip on the concrete in which it is imbedded, and the main point that is sought by experienced engineers is to distribute the reinforcing through every part of the concrete that is subjected to any tensile strain or shearing stress. One standard size of bar would usually answer the purpose in a concrete member if the steel is properly distributed and enough of it is used to afford an ample factor of safety. The prevailing practice among engineers of specifying so many sizes and sections in one order has proved troublesome to the mills, and in the present condition of the bar trade orders of this character are generally declined, as well as those in which the engineer has evolved fussy theories regarding the chemical composition of steel. Any good Bessemer or open hearth steel answers fully the requirements for ordinary concrete work, and while the analysis of each ingot is usually determined, it is impracticable for a steel mill to guarantee a close analysis on each bar unless the buyer will pay a price considerably higher than is obtained for ordinary steel bars.

Co-operation between the steel manufacturers and engineers of national reputation in concrete construction will undoubtedly lead to the adoption of simple standard specifications for concrete bars, which can be followed readily by engineers and contractors on all ordinary work of this character. The various forms of patented bars are very desirable for the purposes for which they are designed, but it is not necessary that each engineer in the United States who is erecting a piece of concrete work should endeavor to invent something original in the way of reinforcing material. Erratic or complex specifications increase the cost of manufacturing the bars, and in the present congested condition of the bar mills it is difficult to find one that will undertake to furnish anything but plain standard sizes.

The Buyer and His Trade Newspaper.

The inability of a great manufacturing house to maintain its former position in the market is attributed by competitors to the fact that its management dislikes to receive the calls of traveling salesmen and avoids doing so on all possible occasions. A concern which won a great name in the days of its progressive youth has fallen back because those who direct its affairs have insufficient conception of modern methods as practiced by rival manufacturers. These managers will not investigate new conditions, new methods and new equipment, and consequently are out of touch with the trend of the age. The force of salesmen who serve any line of industry constitute a source of varied and useful information. To use them intelligently is an important factor in successful management. Every manager must constantly seek two classes of information—where and how to buy to best advantage, and where to sell the product. The traveling salesman assists him greatly in both ways, if he is a man skilled in his line.

The editorial and advertising pages of the technical press are among the best of traveling salesmen. If a manufacturer believes in seeing personally the salesmen who call at his office or insists that his purchasing agent shall always be accessible to them, then he should have an equally keen appreciation of the newspaper of his industry and those of the industries from which he purchases his equipment and materials. They are visitors conveying both of the great classes of information which he requires. Market reports assist him in his purchasing, and these he uses unremittingly. Very important to him is publicity concerning his requirements in the market. But sometimes he and more often his purchasing agent are slow in availing themselves of this means of making known their wants, because they realize that they will get what they are pleased to call an inundation of literature, letters and representatives of manufacturers and dealers. The mere fact of this proves the value to them of the system.

From a commercial standpoint, the information so obtained is invaluable. Its possessor has a broader aspect of the market. He has learned of people with whom he should be in touch, but of whose existence he had been unaware. He has discovered tools for doing his work cheaper or better, or both. His greater acquaintance places him in an advantageous position in his buying. This is true of all manufacturing plants, but the influence is the greatest, of course, where works are somewhat isolated as regards the great commercial and industrial centers. A very successful manufacturer says that no salesman should be turned away without an audience, if it is possible to make one, for none, with rare exception, fails to impart some information that directly or indirectly is of value. If this is the case, the results of publicity as to requirements of equipment, and, in many cases, materials and supplies, must be easily recognizable by wideawake buyers.

Vocational Advice in Public Schools.

Boston proposes to inaugurate a system of vocational advice to pupils, following the lead of the Y. M. C. A. and other philanthropic organizations. The plan is to guide those children about to drop out of school so that they may find the most congenial and profitable vocations within their limts. Active co-operation in this work between manufacturers and school departments suggests itself as yet another means of bringing a good class of youth into industrial employment. The idea savors of trade school co-operation between school and shop. If employers could register their wants for boys for apprentice systems or for general employment and these wants could be filled through lads guided shopward by their teachers, it would doubtless be fruitful of good results.

The Barrett Pipe Forcing Jack Put to Good Use.—The Barrett pipe forcing jack, illustrated in *The Iron Age* of June 10, 1909, and manufactured by the Duff Mfg. Company, Pittsburgh, Pa., was recently used for the purpose of accomplishing a connection which would have been exceedingly difficult otherwise. A property owner desired to connect two buildings on opposite sides of a street with a steam pipe. Permission was sought from the City Council to make the connection, but an honest method of procedure was blocked. Digging a trench across the street was prohibited and it was likewise forbidden to suspend the pipes overhead. The property owner employed a Barrett pipe forcing jack and pushed his pipe under the street from one building to the other. He thus made the connection successfully without disturbing the street and at no serious expense.

The People's Gas Building, Chicago, Erected in Record Time.

A new high record in building construction has been made by the Lanquist & Illsely Company in the erection of the second section of the People's Gas Building at the northwest corner of Michigan avenue and Adams street, Chicago. The property immediately on the corner, fronting 62 ft. on Michigan avenue and 171 ft. on Adams street, improved with an old eight-story building, was turned over to the contractors January 2. The old buildings were wrecked and the foundations for the new structure were completed February 22. The erection of the steel framework began immediately, the first piece of steel being set March 1, and the flagpole, indicating that the steel frame for the structure to a hight of 22 stories had been completed, was set April 12, in just six weeks to a day. In the 36 days 3640 tons of steel were placed in position by one shift of 140 men without an accident or interruption of any kind.

This is considered a remarkable achievement by builders, the record heretofore being at the rate of about one and one-half stories a week, or three stories every two weeks, which is considered rapid work. The rest of the building is proceeding at the same rate. It is the expectation that the structure will be inclosed by June 1, the building to be completed for occupancy October 1.

The foregoing relates entirely to the second section of the People's Gas Building. The first section includes 22 stories, fronting 136 ft. on Michigan avenue, extending back to a depth of 171 ft., 62 ft. north of Adams street, part of which is now occupied. The same contractor erected the first section. The company began work on the first section January 1 of last year, the building being inclosed by October 29, the expectation being that the first section would be completed and ready for occupancy by May 1, 1910, but the building is now practically finished and a number of tenants have moved in. The building was designed by D. H. Burnham & Co., architects, Chicago, and is a notable addition to the large number of handsome office buildings in that city.

The German Building Trades Lockout.

A Berlin dispatch, under date of April 16, says:

"The building trades lockout, which has already made a quarter of a million of workmen idle, appears to be the beginning of a long struggle affecting many divisions of the national industry. The employers have locked out the men in an effort to put an end once and for all to what they regard as the intolerable demands of the latter.

"The employers declare that the workmen have been pursuing for several years a policy of forcing higher wages and shorter hours by bringing about local strikes in various cities, thus securing occasional advantages which they would be unable to obtain through concerted action. They also say that the time has come when employers must stand together to hold their position against their employees. The General Employers' Organization, which includes representatives of every German industry, is firmly supporting the lockout, and has already voted several million marks for the aid of the master builders. The organization apparently proposes to supply the sinews of war so long as the lockout continues."

The blast furnace of the Struthers Furnace Company, at Struthers, Ohio, produced 11,844 gross tons of pig iron in March. Its output April 2 was 485 tons. The Struthers Coal & Coke Company, an identified interest, turned out 13,707 tons of coke at its 200 ovens in March.

Working Tailings.

BY CONNECTICUT.

"The waste in mining and reduction has always been large, ranging from 25 to 50 per cent.; indeed, it is not uncommon for later miners to get their best returns from working the tailings left by their predecessors."

This statement, appearing in a recent issue of *The Iron Age*, refers to a specific class of industry—mining and ore reduction. Yet it touches upon a great truth and a very widely existent condition, for a little study will show that wasteful processes and methods obtain in all classes of business; realizing which, it becomes the pressing duty of each one of us to cut down the wastes—to work over one's own tailings.

It is quite possible, and highly probable, that the predecessors of the present mining world were either ignorant of their losses or were complacent in the thought that they were doing the best they could. It remained, then, for their successors to open their eyes for them, by recovering the precious metal from the very refuse on which they trod. This, we think, is the very point that should make one sit up and think, that should put into our easy complacency a generous pinch of uneasiness.

How roundly we score the old school for its clumsy processes, for its contentment with anything less than maximum returns! Yet in time shall come to us the title "old school." Some day, perhaps, nay, surely, will our boasted "improvements" and our "perfected" methods become a laughing stock and a butt. The tailings of two or three score years ago were far from being all dross; just as surely to-day the precious metal flows out through the sluices to the dump!

Comparatively speaking, it is a simple calculation to discover the percentage of waste in ore reduction, so that one can ascertain with reasonable accuracy what progress any improvement in method has made toward a complete recovery of the metal content. In other lines of business, however, one has no definite goal, no 100 per cent. recovery mark, for which to strive. The possibilities of increase in productive efficiency are unknown; like diamonds, they lie out of sight, embedded in the intangibility of the future. Yet diamonds we can surely find, if we keep on digging, although at just which blow of the pick we shall strike the matrix it is not given us to know.

Perhaps it is unfair to those of 20 years ago to think of them as stupidly complacent, as too easily satisfied. On sober thought we are convinced that it is very unfair, and we retract. We have to-day a goodly throng of progressive, pushing souls; strongs hearts and ambitious minds could not have been wanting then. All of which but lays the finger of silence on our lips, lest we taste the bitterness of regret at what we have said, when to-morrow the latest child of our brain totters.

If we must be content, let the contenment be but the fleeting impression of a moment over a thing well done, forgotten the next instant because of an ever-present pressure of things to do, of things to do better than ever before. Which means, as much as anything else, that all our responsibilities, commercial and otherwise, should be accepted with a firm belief that, earnest though our effort shall be, the seams and cracks of all human products shall still run through our work. Gold in the tailings there has been, gold in the tailings there always will be, but contentment corrodes and rusts.

The blast furnace of the Clinton Iron & Steel Company, Pittsburgh, has been blown out to permit of a new engine being installed. The furnace will likely be idle for a month or more.

Lake Superior Iron Mines.

Recent Developments on the Michigan Ranges.

MARQUETTE, MICH., April 16, 1910.—The Independent Iron Company, recently organized to operate in the Lake Superior region, has been incorporated in Arizona, with a capital of $1,000,000. It is controlled by Michigan men, and its officers are the following: President, John A. Russell; vice-president, Capt. John T. Spencer; secretary, Wm. L. White; treasurer, McArthur Rittenhouse, all of Detroit with the exception of Captain Spencer, who is of Iron Mountain, Mich. The directors are the above named, and Wm. A. Jackson, L. C. Stanley, Eugene F. Bradt and Wm. B. Cady, Detroit, and Frederick B. Sheperd, New York. The company has acquired the holdings of mineral lands and explorations of Captain Spencer on the Menominee range and elsewhere in the Lake Superior country. It is the intention to develop the Spencer property to the north and west of Iron Mountain to a shipping stage at once, and to forward several sample cargoes this season. Exploration will be conducted at various properties, among them the old Erie mine on the Marquette range.

The Calumet mine has suspended operations. It employed 100 men. It is a property of Pickands, Mather & Co., located in Section 8, 41-28, in the Felch Mountain district, northeast of Iron Mountain. It is a producer of low-grade ore, and it has a large amount in stock. Only 120,000 tons of ore has been produced, of which 52,000 tons was sent out in 1907. No shipments were made last season.

Activity in the Randville District.

Seven or eight miles west of the Calumet mine is the Groveland property, in Section 31, 42-49. It was taken over two years ago by the Huron interests, composed of Ohio furnacemen. Exploratory work has since shown a large body of ore of excellent grade, and preparations are being made now to develop it on an extensive scale. Machinery has been ordered and additional accommodations are to be provided for the working force, which is to be materially increased. The Groveland or Randville district has not been held in particularly high esteem in the past, but it is evident that it is to be heard from in no uncertain manner. The Breitung interests, which are conducting diamond drilling operations, have found ore, and so has the John T. Jones Furnace Company of Iron Mountain, which has a shaft down and is now testing its deposit laterally. Mr. Jones is about ready for another trial of his rotary kiln direct process at Iron Mountain. Various changes have been made that are considered material improvements to the plant as at first devised. The inventor claims a great lessening of the cost of treating ores, not only iron, but lead and zinc.

At its big Chapin mine at Iron Mountain, the United States Steel Corporation will soon commence the erection of a model dry house. The building, 64 x 104 ft., will be of stone and steel construction and will be erected in the vicinity of C. Ludington shaft. There will be 660 steel lockers for the clothing of the men and shower baths and enameled wash basins will be provided.

A contract has been awarded by the Steel Corporation for the erection of 20 additional dwelling houses at the Dober mine at Stambaugh, at the western end of the Menominee range. The Dober is a fine property from which more than 2,000,000 tons of ore has already been shipped and which still has extensive reserves. A diamond drill is now in commission underground, investigating the possibilities of the W. H. Selden tract, adjoining on the west and which is believed to contain a continuation of the Dober deposit. In the same portion of the Menominee range, Oglebay, Norton & Co. of Cleveland are exploring the Greenhoot lands. This tract is in the vicinity of Pickands, Mather & Co.'s Baltic mine and was partly tested in 1907.

Underground Dining Rooms.

A novelty even in the Lake Superior region, where the most up-to-date methods are in vogue, is the underground dining rooms at Corrigan, McKinney & Co.'s Great Western property in the Crystal Falls district of the Menominee. Two rooms, one on the eleventh and one on the twelfth level, 1100 and 1200 ft. beneath the surface, are cut in solid rock. They are 95 ft. long, 12 ft. wide and 8 ft. high. The floor is of concrete, which is flushed daily, and the walls are whitewashed. The rooms are heated with steam and lighted with electricity. A washroom, 17 x 12 ft. and supplied with hot and cold water, opens into each one. The dining rooms are each roomy enough to accommodate 200 men and they are extremely popular. The miners are privileged to have warm meals brought to the shaft each day, and at a certain time the man whose duty it is to attend to the dining room and the blasting powder ascends to the surface and gathers up the pails and baskets. The men generally have their dinners eaten by the time it would take to hoist them above ground, and then they stretch out on the benches and rest. Aside from the time that is saved, the hazard of underground work is lessened, the crowding of the men in the cages when ascending or descending having occasionally resulted in an accident. The Great Western is not being vigorously operated this season. This is because the mine has not been shipping all the ore produced the past three years and the stock pile has grown until it now contains in the neighborhood of 400,000 tons.

Republic District, Marquette Range.

The old Erie property, in section 28, 47-30, in the Republic district of the Marquette range, is to be given another trial. It has been taken over by the newly organized Independent Mining Company, as stated above, along with other options held by Captain John T. Spencer. The Erie was opened years ago, when it produced a few thousand tons of ore. The shaft was put down only 200 ft. The vein had narrowed from 15 ft. to 2 or 3 ft. at that depth, and the ore had become considerably mixed with quartz, so that work was suspended. In view of the developments in the western portion of the Marquette range in later years it appears that the work heretofore carried on at the Erie was at altogether too shallow a depth. It has often been commented on that the great Republic fold, where there is a bend after the form of an immense horseshoe of the rock formations, has thus far produced only one profitable mine. Such ore as was produced at the Erie ran about 66 to 68 per cent. in metallic iron, where it was clean, and it was well within the Bessemer limit as to phosphorus. The product was very similar to the specular mined at the Republic. Since this latter property is developed to a depth of 2000 ft., it appears entirely probable that the work at the Erie was not carried downward sufficiently far to find the real deposits. For that reason the operations now to be conducted will be watched with interest, and particularly by the owners of other oldtime explorations in the district, among which may be mentioned the Cannon, Magnetic, Berea and Metropolis.

Hoose & Person, the Iron Mountain contractors, who will carry on stripping and mining operations at the Portland property of the Rogers-Brown interests in the Michigamme field of the Marquette range, are assembling their equipment, and will have their work well under way very shortly. The contract has been enlarged, and now calls for the removal of 150,000 cu. yd. of overburden and the mining of 250,000 tons of ore. Two steam shovels will be employed.

It is understood that the Chicago & Northwestern road will build on an extension to the mines west of Michigamme, and that Hoose & Person have secured

this contract also. One thousand steel ore cars, ordered some months ago, are being delivered to the Northwestern road this spring. Half of these are for service on the Menominee and Marquette ranges, and half on the Gogebic range.

PERSONAL.

Charles Kirchhoff sailed for Europe on Tuesday, expecting to be abroad for several months. He will sojourn for some time in Italy, going thence to Germany.

Joseph Gallup, formerly superintendent of the open hearth department of the Worth Brothers Company, Coatesville, Pa., has accepted the position of general superintendent of the Ontario Iron & Steel Company, Welland, Ont.

H. Boholm, director of the Tromsösund iron fields, Roktdalen zinc and lead ore deposits and Mok and Gulstad copper mines, Trondhjem, Norway, and Alex. Christiansen, mining and civil engineer, Christiania, Norway, are in this country.

D. K. Bartlett, in addition to his interest as vice-president of the Massachusetts Fan Company, Watertown, Mass., has been appointed assistant treasurer of the Builders' Iron Foundry, Providence, R. I.

The Bay View Foundry Company, Sandusky, Ohio, announces that it has secured the exclusive services of William C. Scott, chemist and metallurgist, who has last been serving as chief chemist for the city of Sandusky, in charge of its water purification plant.

H. F. Stimpson, 1 Madison avenue, New York, has removed his office to the Singer Building, having become associated with the Universal Audit Company as its chief engineer, in charge of the design and development of efficiency in industrial plants. Among other organizations Mr. Stimpson has been connected with the General Electric Company, Dodge & Day, the Roberts & Abbott Company, Cleveland, and the Emerson Company, New York.

J. M. Butler, Pittsburgh, Pa., has been appointed auditor and office manager for the American branch of H. Koppers at Joliet, Ill.

W. L. Rodgers, president of the Pittsburgh Gage & Supply Company, has gone on a trip to Bermuda.

C. H. Zehnder arrived in New York Tuesday from an extended European trip.

J. William Middendorf, of the banking firm of Middendorf, Williams & Co., Baltimore, Md., has been added to the directory of the Alabama Consolidated Coal & Iron Company. Other important changes are impending among the company's officers.

Daniel W. Talcott, Jr., has been elected general manager of the Burden Iron Company, Troy, N. Y., to succeed the late John L. Arts. William E. Millhouse has been chosen as assistant manager, to succeed the late Nicholas J. Gable. Both of the new officers have been in the employ of the Burden Iron Company for over 30 years. For the last 26 years Mr. Talcott had been Mr. Arts' assistant.

Louis Bruch, in charge of the publicity department of the American Radiator Company, Chicago, sailed for Europe April 14, to visit the foreign branch companies, taking his assortment of lantern slides to deliver several lectures while abroad.

Courtlandt Nicoll, formerly of B. Nicoll & Co., has opened an office for the practice of law at 31 Nassau street, New York.

Benjamin Talbot, managing director of the Cargo Fleet Iron & Steel Company, Middlesbrough, England, is visiting this country in the interest of the Talbot continuous steel process.

B. D. Lockwood, assistant chief engineer of the Pressed Steel Car Company, Pittsburgh, made an informal address recently before employees of the Pennsylvania Railroad at Pitcairn, Pa., his subject being "Steel Cars and Their Construction."

Guy S. Johnston, aged 23 years, who has been appointed chief mechanical and mill engineer at the Universal Portland Cement Company's plant at Universal, Pa., is one of the youngest men intrusted with important responsibilities in the service of the United States Steel Corporation. He will have charge of the extensive additions to be made to this plant.

OBITUARY.

JOHN WHEELER BLANCHARD, West Newton, Mass., founder of the Blanchard Machine Company, Cambridge, died April 18, aged 78 years. He was a native of Boston, and after graduating from the old Hawes school went into the ship chandlery and commission business. In 1862 he formed a partnership with E. O. Holmes of Malden for the manufacture of grist mill machinery, and, 30 years later, on the death of his partner, organized the Blanchard Machine Company, of which he was president until four years ago. He leaves a daughter and three sons, one of whom, Winslow Blanchard, is the present head of the business.

ALDEN B. WEBBER, Boston, Mass., treasurer of the New England Screw Company, died suddenly April 16, aged 41 years. He was a native of Bedford, Mass. He had been treasurer of the company for 11 years.

HENRY REYNOLDS, New Haven, Conn., died April 16, aged 86 years. He was born in Southbridge, Mass. Starting life without capital or influential backing and with the little education he had obtained from the common schools, he worked himself into the apprenticeship of Ottis Tuffts, a celebrated mechanical engineer of Boston. Mr. Reynolds went to Springfield, Mass., in 1848 and was superintendent and part proprietor of the American Machine Works until 1861. He removed to New Haven in that year and became interested in the Plant's Mfg. Company. He was engaged in this until May, 1867, when he established the business of the present Reynolds Company, making bolts, machine screws and machinery. Under the careful supervision of Mr. Reynolds the establishment grew rapidly from a single screw machine, 5-hp. engine, to the present business, in which 150 skilled men are employed. He leaves two sons.

STEPHEN J. MCARDLE, New York, died April 19, aged 38 years. He was born in Peekskill, N. Y., and was the oldest son of P. J. McArdle of Albany. He was educated at Niagara College, Niagara Falls, and engaged in the old material business, his father being one of the most prominent dealers in that line in the country. After a wide experience in this banch of trade, Stephen located 12 years ago in New York City, establishing the Metropolitan Iron & Steel Company, dealing in old materials, of which he was president at the time of his death. He was also director of the International Iron & Metal Company, Newark, N. J. He leaves a widow, two sons and two daughters.

The Baldwin Locomotive Works, Philadelphia, Pa., has disposed of a bond issue of $10,000,000, first mortgage, 30-year gold bonds bearing interest at 5 per cent. The purpose of this bond issue is to take up the company's floating indebtedness, changing its form from that in which it was carried prior to the company's incorporation July 1, 1909. This loan will not be used for any extension to the plant or equipment. The amount above that required to liquidate its floating indebtedness, in the shape of commercial paper, will be held to provide additional working capital. This company received an order the past week for 80 large freight locomotives for early delivery from the Pennsylvania Railroad, and reports the business outlook as very promising.

The Steel Corporation's Annual Meeting.

The annual meeting of the stockholders of the United States Steel Corporation was held at Hoboken, N. J., Monday, April 18. The directors whose terms expire in 1910 were re-elected. They are Alfred Clifford, Edmund C. Converse, Elbert H. Gary, J. Pierpont Morgan, J. Pierpont Morgan, Jr., Thomas Morrison, George W. Perkins and Henry Phipps. The meeting of the directors for the election of officers will be held April 26. At Monday's meeting the lists of stockholders of the corporation were open for inspection, and newspaper publications have since been made of the names of the principal holders, this being the first instance of such publicity in seven or eight years. There are now about 100,000 stockholders, or about twice the number of holders of Pennsylvania Railroad stock. Chairman E. H. Gary responded to the request of a stockholder for some statement concerning the affairs of the corporation. He said in part:

I have no objection to saying that we have no reason to anticipate trouble from any source, nor any reason to suppose that our business prospects will be any poorer than they are at the present time. Of course, naturally from time to time we encounter more or less difficulty in keeping our mills running to their full capacity, and in receiving prices which we think are adequate and reasonable. But our effort all the time is to do our business in such a way that we cannot reasonably be criticised by any one who is interested in our affairs—criticised by the stockholders, by the employees, by our customers, by our competitors or by the general public. We believe that in the long run if we transact business in that way, and at the same time keep the public fully advised from time to time in regard to our affairs, we will receive such treatment as we deserve. Of course, when general business conditions are good we prosper more, and when they are not so good we prosper less. That may not be as applicable to our business as to the business of some others, for the reason that we think we have some advantages in regard to cost of production and cost of deliveries. But that we are more or less affected by general business conditions goes without saying. At the present time our mills are running to practically their capacity, and some of them are considerably behind in shipping up to the requirements of the trade. That we may have some reactions during the year is possible, but we have nothing in sight at the present time to indicate that our business during the whole of this year will not be very good and entirely satisfactory.

At the time the United States Steel Corporation was organized we had a capacity of about 25,000 tons per day; at the present time we have a capacity of about 42,000 tons per day; and our manufacturing capacity has been increased by investments made from our earnings. So you will see that our opportunities for success are much greater at present than they were when we were organized. Moreover, since we were organized we have spent large sums of money in the acquisition of additional raw products, which are scarce and growing scarcer, and also in the improvement of our facilities by the introduction of new methods, new machinery, labor-saving devices and the installation of the most modern methods of manufacturing at a low cost.

It would not be seemly to boast of our position or of our prospects, but we believe we are well secured against trouble in the future from any direction. The stockholders of our corporation have the opportunity at any time of securing information which is proper for them to receive. We have in our company no officials who receive advance information and profit by that information.

It is a great pleasure to us, of course, to ascertain that our stockholders have confidence in our management. That confidence is shown by the fact that we receive proxies from so large a percentage of the stockholders, and from the further fact that at none of our meetings do we find any antagonism or even any criticism. It is our intention all the time to secure and retain the confidence of everyone who is interested in the affairs of our corporation.

A Freight Rate Verdict for the Wheeling Corrugating Company.—A case involving charges on a shipment of roofing to the Southwest has been decided by the Interstate Commerce Commission in favor of the Wheeling Corrugating Company against the Baltimore & Ohio, Baltimore & Ohio Southwestern and St. Louis, Iron Mountain & Southern railroads. By unanimous decree of the commission it was ordered that the St. Louis, Iron Mountain & Southern pay to the Wheeling Corrugating Company $720 with interest for an unreasonable rate charged for the transportation of a carload of iron roofing from the Mississippi River to Nowata, Okla., as a part of a through shipment from Wheeling, the rate charged having been found unreasonable.

Steel Corporation Subsidiaries Advance Wages.

Following a meeting of the officers of the United States Steel Corporation and the presidents of the subsidiary companies in New York Thursday, April 14, the statement below was given out by Chairman Gary:

"The subsidiary companies of the United States Steel Corporation have decided to make substantial increases in wages. Notwithstanding the subject matter has been under careful consideration for the last 60 days, the exact amounts have not yet been fully determined, except as to the ore companies and the coal companies, which have already announced advances. As to the other companies, the figures will be definitely arrived at in time to become operative on May 1, excepting the Tennessee Coal, Iron & Railroad Company and the transportation companies, which may not be able to announce the increases until a later date."

The amount of the advance is not stated, but has been assumed to be about 6 per cent., as in the case of the employees in Lake Superior iron mines, whose wages were raised last month. The average number of employees of the Steel Corporation subsidiaries in 1909 was 195,500 and the amount of salaries and wages paid was $151,663,394. At the close of 1909 the number of employees had increased to 223,377. The monthly payrolls are, therefore, much more now than the average for last year. Leaving out of the account such of the salaried employees of the subsidiary companies as are not affected by the late increase, since they are eligible to share in bonus distributions, it is estimated that the amount of the advance will be not far from $9,000,000 a year.

Supplement to the Iron and Steel Works Directory.

Announcement is made by the American Iron and Steel Association concerning the Supplement to the 1908 Directory to the Iron and Steel Works of the United States, which will be issued May 10. Its publication is due to the fact that a new directory will not be brought out before 1912, and to the numerous changes in the industry in the past two years. All these changes are given in the Supplement, including data concerning new plants built and new companies organized since the spring of 1908. There are some features, also, not found in any edition of the directory. These include a complete list of the manufacturers of billets and sheet and tinplate bars, a complete list of the manufacturers of muck and scrap bars, a complete list of the manufacturers of iron and steel merchant bars, a complete list of the manufacturers of rolled iron and steel concrete bars, and a list of the electric steel works of the country which have been completed or are building or projected.

The Jones & Laughlin Steel Company, Pittsburgh, has bought about 200 acres more land to be added to the 700 acres already owned at Woodlawn, Pa., which is the site for the town it is establishing for its men employed at the Aliquippa Works. Several banks, a club house and a number of stores, offices and apartment buildings are being erected there. In its new plant at Aliquippa six Talbot open hearth furnaces are under erection, but they will not be ready for operation for at least four months.

New Tools Announcements.

Metal Saw Cutting-off Machine.—The American Die & Tool Company, Reading, Pa., is introducing a heavy and powerfully geared metal saw cutting-off machine, designated as size No. 7. The saw blade has a central spur gear drive, and the gears on the carriage have 4-in. face and are integral with their forged crucible steel shaft. A positive automatic feed variable from ⅛ to 1 in. per minute is provided with automatic stop. Oil from a large reservoir in the base is delivered to the work by a pump and drains back after use. A clutch driving pulley allows belting directly to a line shaft. The saw is 18 in. in diameter and 5-32 in. thick, and is intended to run at 11 rev. per min. The extreme depth of cut is 6¾ in., and the vise will hold up to a 9-in. round. The extreme travel of the saw carriage is 9 in. The machine occupies a floor space of 6 x 2½ ft. and weighs about 2200 lb.

Cutting-off Machine.—The Matson Machine & Tool Company, Bethel, Vt., has developed a new cutting-off machine in which the operation is performed at the back, while the front is completely closed and dust and sparks are prevented from interfering with the operator in any way. The stock is fed by a crank at the side toward the cutting wheel, which has a speed of between 12,000 and 13,000 ft. per minute. The capacity of the machine is 1⅛-in. round stock and flat blocks 3 in. wide, and if desired the stock can be tilted at an angle not exceeding 12 degrees to give the clearance for the side or top of cutting tools.

A Combination Set of Wrenches.—The C. M. B. Wrench Company, Syracuse, N. Y., is making a set of wrenches where the socket wrenches and the universal joints are made of a strong silver-white nonrusting alloy and the connections are of square steel tubing. Using the different combinations of this set, it is possible to tighten nuts and screws in very inaccessible places and any desired amount of leverage can be obtained.

A New Abrasive.—The Goldschmidt Thermit Compny, 90 West street, New York City, has placed on the market a new abrasive material known by the trade name of Corubin. It has been used extensively abroad for some time, and is a by-product in the manufacture of chromium by the thermit process. Three grades are made—coarse, medium and fine.

Horizontal Drilling and Tapping Machine.—The Garvin Machine Company, Spring and Varick streets, New York City, has placed on the market a drilling and tapping machine for finishing hard rubber syringes, collars, nuts and other light work. One pulley secured to the spindle and running between two smaller loose pulleys drives the machine. The belts are shifted by a patented universal belt shifter, operated by a foot treadle, and when the belts which reverse the machine are shifted the chuck opens. Pressing the treadle again starts the machine in the forward direction and closes the chuck. When the work is finished it is not removed from the chuck, but is pushed through the hollow spindle and drops out at the rear end. The turret carries one tap and one drill and is automatic in its operation.

A New Acme Screw Machine.—The Acme Machine Tool Company, Cincinnati, Ohio, is bringing out a new size of the improved screw machine and turret lathe illustrated in *The Iron Age* December 2, 1909. It has a capacity of 1½ x 9 in., but otherwise the same general features as the machine previously described, important characteristics of which are convenient location of all the controlling levers and hand wheels, a head solid with the bed, and strength of design in general to make it powerful enough to use high speed steel tools, so that rapid producing capacity is possible.

Motor Driven Die Slotter.—The Garvin Machine Company, Spring and Varick streets, New York City, applies a motor to its die slotter in such a way that practically no change is required in the machine itself, the motor being bolted to the side of the column and belted directly to the regular driving pulley. The table is provided with cross, longitudinal and vertical adjustment, and if desired a rotary table may be furnished so that all movements ever required in die slotting may be obtained. To give draft or clearance the head may be adjusted to a slight angle. The machine has variable speeds, ranging from 29 to 87 strokes per minute, and the length of stroke is 2½ in. It weighs 1480 lb.

A New Milling Cutter.—A new milling cutter of the porcupine type has been brought out by the Union Twist Drill Company, Athol, Mass. The teeth are split for nearly their entire length and are held in place by a taper pin, which expands them to fit the holes in the steel body. This taper pin is soft and can be easily drilled out whenever it becomes necessary to remove any of the teeth.

Gas Heated Hardening and Tempering Furnaces.—The Westmacott Gas Furnace Company, Providence, R. I., has developed and placed on the market a line of hardening and tempering furnaces using gas for fuel. These include a cylindrical furnace for hardening small tools by the barium chloride process, an oil tempering furnace and a lead hardening furnace. One important feature of these furnaces is a very small gas consumption.

Pipe Expanding and Flanging Machine.—The Lovekin Pipe Expanding & Flanging Machine Company, Philadelphia, Pa., has brought out a line of machines to meet the increasing demand for flanged and expanded pipe joints in all classes of piping work. The regular line will handle all sizes of pipes from 2 to 24 in. in diameter, and special machines for larger sizes can be built to order. The machine expands the pipe into internal grooves on the flange by the use of rolling tools, and the outer end of the pipe is forced into a beveled or chamfered recess at the face of the flange. The advantage claimed for the rolling process over both riveting and threading is that it is cheaper than the former and a thinner pipe can be used than when metal has to be cut away to form the threads.

Punching and Shearing Machinery.—The Carpenter-Kerlin Gear Machine Company, 77 White street, New York City, is putting out a line of machines, including those for shearing angles, squares and rounds alone, or combining these functions with a plate shear, or with a punch. Several sizes of each type are built, the largest of which will punch a 2-in. hole in a 1 9-16-in. plate, shear rounds up to 3 in. in diameter and angles up to 7 x ¾ in. The frame and other cast parts are all of steel and the shaft of tempered steel running in phosphor bronze or cast iron bearings, according to the service required of it.

All-Geared Lathe.—The Niles works of the Niles-Bement-Pond Company, Hamilton, Ohio, has recently put out a new model of an all-geared lathe, in which the gearing in the head is inclosed and the motor is mounted on the head, and the transmission gears are also inclosed. Guards are also provided for the gears at the end of the lathe. The quick-change gear mechanism is also inclosed and provides for 32 changes. These are obtained by shifting the tumbler lever either above or below its neutral position. This movement of the lever causes either the upper or lower set of tumbler gears to mesh according to the direction in which the lever is shifted.

Boring Tool with Inserted Cutters.—George Braithwaite and Oscar B. Elder, Chicopee Falls, Mass., have invented a new boring tool, in which the body is made of any suitable material, while the blades are of high speed steel. Pins slightly tapered at one end act as wedges and force the blades to the bottom of the slots.

A New Power Hammer.—A hammer designed to forge interchangeable parts to within very close limits has been built by the New Metal Tool Steel Company, Standish, Maine. Means for adjusting the stroke to various sizes of work while the machine is in operation are provided, and by a spring helve the force of the blow of the ram is multiplied, while at the same time it has enough elasticity to prevent breakage and cushion the jar so that it is not felt in the working parts of the hammer.

THE IRON AND METAL MARKETS

Consumption Slightly Less.

Pig Iron Accumulating More Rapidly—Sharp Curtailment in Coke.

More attention has been given in the past week to indications here and there of lessened consumption of iron and steel. Foundries in some lines are not as busy as was the case in March, and in the metal working trades the manufacturers' employment bureaus are placing fewer men. There is considerable variation in the reports from these consuming industries, however, operations with many of them being fully up to the scale of the past six months. With most of the large steel companies the volume of new business falls somewhat short of the average of last month.

The wage advances by the railroads and by large steel interests having set the pace, manufacturers are exercising more caution both in buying and selling, as it is recognized that wage questions will come up all along the line.

Blast furnace companies are agreed on the necessity for cutting down output, but there is no strong initiative in the blowing out movement, though early developments are expected. Pig iron stocks at furnaces are piling up more rapidly, and it is evident that action by some producers cannot be long delayed.

Further evidence comes up that pig iron taken in quiet deals in the past month much exceeds the general estimate. In the Chicago district a very large buyer has been figuring on iron needed late in the year. The pipe interests that were reported to have broken off negotiations with Southern makers closed 25,000 to 30,000 tons, of lower grades, some of it on the basis of $12, Birmingham, for No. 2, while the earlier deliveries carried slightly lower prices. On gray forge as low as $10.75, Birmingham, is reported.

A number of large melters of iron in the Central West, particularly in the stove and implement trades, have been figuring on their requirements for the second half of the year. It is noteworthy that smaller consumers have not followed the lead of the larger foundries in buying at the prices of recent weeks. It has been announced by some interests that have been feeling the market that they are waiting for $11 iron.

The reduction of coke output in the Connellsville district has begun in earnest. The Frick Coke Company has put out 1200 ovens and other producers are participating in the movement. The Steel Corporation has large coke stocks on hand. In September it will start the first block of ovens in the new Gary by-product coke plant.

In the East a wire works strike has reduced billet shipments from one steel plant. This with the freer offerings of semifinished steel in other districts has brought prices down from 50c. to 75c. In the Pittsburgh district sales of Bessemer billets have been made at $26.50 and lower.

Railroad demand has increased and it is believed that railroad purchases of various iron and steel products will not much longer be held back. On the other hand, some good inquiries for spikes for Western roads have been withdrawn from the market. Bridge inquiries, which are expected to be closed this month, include 5000 tons for the Chicago Great Western, 3000 tons for the New Haven, 6500 tons for the Great Northern and 6000 tons for the Oregon Short Line. The American Bridge Company has taken the Pittsburgh, Shawmut & Northern bridge contract, amounting to over 7000 tons.

Among rail orders are 12,000 tons for the Lake Shore, 5000 tons for the Nickel Plate, 2000 tons for the St. Louis, Brownsville & Mexico, and 11,000 tons of open hearth rails for the Boston & Maine, which is expected to buy 10,000 tons additional.

An important pipe project, for which financial arrangements are shaping up, is that of the California & Arizona Pipe Line Company. It is proposed to build from southern California to Cananea, Mexico, with various branch lines, to supply fuel oil to smelters and other plants. From 1800 to 2000 miles of 8-in. pipe, or about 150,000 tons, would be required.

The bar demand is still very heavy. Western plow manufacturers are taking up the question of their requirements for the coming year.

On the recent buying movement in copper fully 30,000,000 lb. was taken. Lake copper advanced this week to 13¼c. after considerable sales at 13c.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Apr. 20, 1910.	Apr. 13, 1910.	Mar. 23, 1910.	Apr. 21, 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	*$17.75*	$17.75	$18.00	$16.25
Foundry No. 2, Southern, Cincinnati	*15.25*	15.25	16.25	14.25
Foundry No. 2, local, Chicago	*17.25*	17.50	18.25	16.50
Basic, delivered, eastern Pa.	*17.50*	17.50	18.00	15.00
Basic, Valley furnace	16.00	16.00	16.00	14.00
Bessemer, Pittsburgh	18.40	18.40	18.40	15.65
Gray forge, Pittsburgh	16.15	16.15	16.15	14.40
Lake Superior charcoal, Chicago	19.00	19.00	19.00	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	*26.50*	27.00	27.50	23.00
Forging billets, Pittsburgh	32.00	32.00	32.00	25.00
Open hearth billets, Philadelphia	*30.00*	30.60	30.60	25.40
Wire rods, Pittsburgh	*32.00*	33.00	33.00	29.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	*16.25*	16.25	16.50	13.50
Steel rails, melting, Philadelphia	*16.00*	16.25	16.50	13.25
Iron rails, Chicago	*18.50*	18.50	19.50	16.25
Iron rails, Philadelphia	20.50	20.50	20.50	17.00
Car wheels, Chicago	*16.50*	16.50	17.00	14.50
Car wheels, Philadelphia	*16.00*	16.00	16.75	14.00
Heavy steel scrap, Pittsburgh	*16.25*	17.00	17.00	14.00
Heavy steel scrap, Chicago	*14.25*	14.50	15.00	12.50
Heavy steel scrap, Philadelphia	*16.00*	16.25	16.50	13.25
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	*1.50*	1.50	1.55	1.37
Common iron bars, Chicago	*1.50*	1.55	1.55	1.27½
Common iron bars, Pittsburgh	*1.60*	1.60	1.65	1.30
Steel bars, tidewater, New York	1.61	1.61	1.61	1.26
Steel bars, Pittsburgh	1.45	1.45	1.45	1.10
Tank plates, tidewater, New York	1.71	1.71	1.71	1.41
Tank plates, Pittsburgh	1.55	1.55	1.55	1.25
Beams, tidewater, New York	1.66	1.66	1.66	1.41
Beams, Pittsburgh	1.50	1.50	1.50	1.25
Angles, tidewater, New York	1.66	1.66	1.66	1.41
Angles, Pittsburgh	1.50	1.50	1.50	1.25
Skelp, grooved steel, Pittsburgh	1.50	1.50	1.50	1.20
Skelp, sheared steel, Pittsburgh	1.60	1.60	1.60	1.30
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.40	2.40	2.40	2.20
Wire nails, Pittsburgh*	1.85	1.85	1.85	1.85
Cut nails, Pittsburgh	1.85	1.85	1.85	1.70
Barb wire, galv., Pittsburgh*	2.15	2.15	2.15	2.30
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	*13.25*	13.00	13.75	12.87½
Electrolytic copper, New York	*12.80*	12.87½	13.37½	12.62½
Spelter, New York	*5.60*	5.60	5.73	5.07½
Spelter, St. Louis	*5.45*	5.45	5.58	4.95
Lead, New York	*4.40*	4.40	4.45	4.25
Lead, St. Louis	*4.25*	4.25	4.30	4.20
Tin, New York	**33.05**	32.45	32.35	29.55
Antimony, Hallett, New York	8.25	8.25	8.25	8.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.64

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.50c. to 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c. net; angles over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.70c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 and 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe which went into effect January 1:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛ and ¼ in.	70	54	65	..
⅜ in.	71	57	66	52
½ in.	74	62	69	57
¾ to 6 in.	78	68	73	63
7 to 12 in.	72	57	67	52
Plugged and Reamed.				
1 to 4 in.	76	66	71	61
Extra Strong, Plain Ends.				
⅛ to ⅜ in.	63	51	58	46
½ to 4 in.	70	58	65	53
4½ to 8 in.	66	54	61	49
9, 10, 11 and 12 in.	54	42	..	..
Double Extra Strong, Plain Ends.				
½ to 8 in.	59	48	54	43

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1¼ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 5 in.	69	55
6 to 13 in.	61	43
2½ in. and smaller, over 18 ft., 10 per cent. net extra.		
2¾ in. and larger, over 22 ft., 10 per cent. net extra.		

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $32.

Steel Rivets.—Structural rivets, ¾-in. and larger, 2.15c., base; cone head boiler rivets, ¾-in. and larger, 2.25c., base; ⅝-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of $2 to $3 a ton to the small trade.

Pittsburgh.

PARK BUILDING, April 20, 1910.—(*By Telegraph.*)

Pig Iron.—The blowing out of blast furnaces in the Central West, on account of overproduction of pig iron, seems to have started in earnest. In the last few days, one furnace of the Wheeling Steel & Iron Company at Wheeling, W. Va., and No. 2 stack of the La Belle Iron Works at Steubenville, Ohio, have gone out, while next week Hall Furnace of the Republic Iron & Steel Company at Sharon, Pa., will likely go out. The opinion seems to prevail that, based on the new prices of ore, present low prices on pig iron must be pretty close to bottom. The advance of 50c. a ton on ore means an additional cost of $1 a ton on pig iron, and with basic at $16 and Bessemer $17.50 at furnace, the margin of profit to merchant furnaces that buy ore and coke is small. There is very little new inquiry for pig iron, and the market is soft. Aside from a trade of 3000 tons of basic for 3000 tons of Bessemer, nothing of moment has been done in this market in the past week. In the absence of sales, we continue to quote Bessemer iron at $17.50 and basic, $16 at Valley furnace, but reports are that both Bessemer and basic, on a firm offer, could be bought at slightly lower figures. We quote malleable Bessemer at $16; No. 2 foundry, $15.50 to $15.75, and gray forge, $15.25, all at Valley furnace, carrying a freight rate of 90c. a ton for delivery in the Pittsburgh district.

Steel.—There is continued weakness in prices of Bessemer steel billets and sheet and tin bars, and a recent sale of Bessemer billets has been made at close to $26, Pittsburgh, by an outside mill, but it is doubtful whether this purchase could be duplicated, as the price is regarded as below the actual market. Open hearth steel continues scarce and is bringing higher prices. We quote Bessemer 4 x 4 in. billets at $26.50 to $27; Bessemer sheet bars, $27.50 to $28; 4 x 4 in. open hearth billets, $28.50 to $29; open hearth small billets, $30 to $30.50; open hearth sheet and tin bars, $29 to $29.50, and forging billets, $32 to $33, Pittsburgh.

(*By Mail.*)

The new demand for nearly all kind of material is light and the tone of the market, especially on pig iron, is weak. There is no doubt that too much is being made, and with all the makers hunting business more or less aggressively, prices are being shaded and consumers lack confidence and are not buying ahead. In pig iron there are no inquiries of moment, and prices on all grades are soft. In explanation of a recent reported sale of 3000 tons of basic iron at $16.50, Valley furnace, it can be stated that this iron was sold by one dealer to another, but the purchaser of the basic iron at $16.50 in turn made a sale of 3000 tons of Bessemer iron to the dealer that sold the basic, and at a price about 50c. a ton under the market. The evident intention of the whole transaction was to affect the monthly price of basic iron, on which a good many contracts for material are based. It is claimed that with the new prices on ore, pig iron at current figures does not allow a fair margin of profit to the merchant furnaces. There is some weakness in prices of Bessemer steel, a recent sale of billets having been made on the basis of $26, Pittsburgh, but this price is somewhat below the general market. There is a continued scarcity of open hearth steel, however, and prices on billets and sheet bars are well maintained. Coke is dull and neglected, and a number of the leading producers are shutting down ovens to curtail output. Prices on plates, sheets, tin plate, steel bars and pipe are firm. In wire products there has been some slight shading.

Ferromanganese.—In the absence of recent sales we quote 80 per cent. foreign at $40.50 to $41, Baltimore, with a freight rate to Pittsburgh of $1.95 a ton. The large inquiry for last half, noted in this report last week, has not yet been placed, but it is understood that some low prices have been named.

Ferrosilicon.—A large consumer in the Shenango Valley is in the market for 500 tons of 50 per cent. for extended delivery, on which low prices have been bid. We quote 50 per cent. at $60, Pittsburgh, with a probability that the order referred to above will be placed at a lower price. We quote 10 per cent. at $23.90; 11 per cent. $24.90 and 12 per cent. $25.90, f.o.b. Pittsburgh.

Muck Bar.—There is no new inquiry. We quote best

grades made from all pig iron at nominally $29, Pittsburgh.

Rods.—A sale is reported of 500 tons of open hearth rods at a price equal to about $32, Pittsburgh. We quote Bessemer and open hearth rods at $32 on large lots for forward delivery and $33 for small lots.

Skelp.—A pipe interest recently placed a contract for a round lot, about 2000 tons, of sheared iron plates with a local mill at 1.87½., Pittsburgh. New inquiry for skelp is light, due to the dull condition of the pipe trade. For ordinary widths and gauges we quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.80c., and sheared iron skelp, 1.90c., all f.o.b. mill, Pittsburgh.

Steel Rails.—The Carnegie Steel Company reports that so far this month its new orders for standard sections and light rails show a slight increase over the same period in March. Current orders for standard sections running from 500 to 1000 tons are fairly numerous, but large contracts are lacking. The lumber interests have been fairly liberal buyers of light rails, and the Carnegie Steel Company received new orders in the past week for about 2000 tons. We quote steel axles at 1.75c. to 1.80c. and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 to 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill.

Plates.—The Carolina, Clinchfield & Ohio has placed six all-steel baggage and mail cars with the Pressed Steel Car Company, this being a new design of car. The Gulf Refining Company has ordered 25 tank cars and the Pittsburgh & Lake Erie Railroad 1000 steel cars from the Standard Steel Car Company. So far this month the output of the Pressed Steel Car Company has averaged about 100 steel cars per day from its Woods Run and McKees Rocks plants, but a strike is now on at the latter works, and this will interfere seriously with the output. The Standard Steel Car Company is turning out from 80 to 90 steel cars per day at its Butler works. The plate mills are well filled up with orders for the next two or three months, and prices on plates are reasonably firm. We continue to quote ¼-in. and heavier at 1.55c., Pittsburgh.

Structural Material.—The American Bridge Company has received a contract for 7500 tons of bridge work for the Pittsburgh, Shawmut & Northern Railroad, for the extension of its line to tap the coal fields near Freeport, Pa., and the same company has taken a contract for 1400 tons for a viaduct for the Louisville & Nashville Railroad, at Henderson, Ky. It was reported that the Big Four contract for 5500 tons for its new shops at Indianapodis, Ind., had been placed with a local concern, but this is not true. Low prices are being made by the fabricating concerns, and it is claimed that either some of these prices are based on plain material below 1.50c. or else the shops are bidding below cost. The situation in this respect is very unsatisfactory, and it is claimed several recent jobs will show a net loss to the concerns that got them. The mills are not well filled up with orders for plain material, and there is no trouble in getting prompt deliveries. We continue to quote beams and channels up to 15-in. on the basis of 1.50c. to 1.55c., Pittsburgh.

Sheets.—The demand for black and galvanized and also for roofing sheets continues quite active, and all the leading mills are well supplied with work, one concern, that has a six-mill sheet plant, reporting that it is practically filled up through third quarter. Specifications against contracts are coming in freely, and concessions in prices have almost entirely disappeared. A very active demand is still experienced for electric and blue annealed sheets, which continue to command premiums in some cases for prompt delivery. Prices on sheets are well maintained.

Tin Plate.—Some large contracts have recently been placed for third quarter delivery, with a few for fourth quarter. All the leading tin plate mills are pretty well filled up to October 1, and in some cases premiums of 5 to 10c. per box over regular prices have been paid for prompt shipment. Press reports that the American Sheet & Tin Plate Company would probably confer with the Amalgamated Association this year on the sheet and tin plate scales are absolutely untrue, as that company will continue to operate its sheet and tin plate mills in the future on the open shop basis. Prices are firm, and we quote 100-lb. cokes at $3.00 per base box, f.o.b. Pittsburgh, for delivery through the second half.

Bars.—There seems to be a disposition on the part of large consumers to hold off, but there is really no hurry for them to cover, as most of them have contracts running up to July 1 and in a few cases for the balance of this year. We continue to quote steel bars at 1.45c., on contracts for delivery ahead, while on general current orders for reasonably prompt shipment 1.50c. is being quoted. All the leading steel bar mills are loaded with contracts for the next three or four months, and are much behind in deliveries. A fair amount of new business is being placed in iron bars, and the mills are reasonably busy. We continue to quote common iron bars at 1.60c. to 1.65c., f.o.b. Pittsburgh.

Hoops and Bands.—A fair amount of new business is being placed, but the mills are running mostly on specifications against contracts which are coming in at a fairly satisfactory rate. We quote steel hoops for forward delivery at 1.50c. to 1.60c., while for prompt shipment as high as 1.65c. is obtainable. Steel bands are 1.40c. to 1.50c. on contracts for forward delivery and 1.60c. to 1.65c. for reasonably prompt shipment, these carrying steel bar card extras.

Spelter.—Consumers are buying only from hand to mouth. Prices are weak. We quote prime grades of Western at 5.40c., East St. Louis, or 5.52½c., Pittsburgh, but on a firm offer this might be shaded.

Spikes.—It is now stated that several of the Western roads that came in the market recently for round lots of railroad spikes have called in their inquiries. One Western road that gave out an order for nearly 4000 kegs afterward canceled it, stating that it had decided to hold off buying until later. The new demand for railroad spikes is only fair, and is mostly for small lots. There is quite an active demand for small railroad and boat spikes, and the mills are pretty busy on these. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at $1.70 for Western shipment and $1.75 for local trade. Boat spikes are firm at $1.75, base, and small railroad spikes at $1.75, base. These prices are for carload and larger lots.

Shafting.—This product is one of the most active on the whole list, new orders being plentiful and specifications against contracts continuing to come in very freely, keeping the concerns that make shafting extremely busy. Regular discounts are 55 per cent. off in carloads and 50 per cent. in less than carloads, delivered in base territory, and it is stated these prices are being firmly maintained.

Rivets.—New orders are coming in more liberally and consumers of rivets are specifying quite freely on their contracts. It is stated that prices are being maintained.

Wire Products.—The situation in wire products is unsatisfactory from the standpoint of new orders, which are not nearly so plentiful and not as heavy as the mills expected they would be at this time of the year. Stocks held by the mills and jobbers are still heavy, and they are not moving out as fast as anticipated. In some cases there is a disposition by one or two mills to take on new orders for wire nails on the same basis as for contracts, which is $1.80 per keg. It is stated that new orders for cut nails and for barb and fence wire are more numerous, but jobbers and consumers are buying in small lots. We quote wire nails at $1.85 in carload and larger lots; painted barb wire, $1.85; galvanized, $2.15; annealed fence wire, $1.65; galvanized, $1.95, and cut nails, $1.85, all f.o.b. cars, Pittsburgh, usual terms, with full freight to destination added.

Merchant Pipe.—The entire Lorain plant of the National Tube Company, which shut down recently, is now reported to be in full operation again, with the exception of one blast furnace, which is out for relining. The largest project under way in the pipe trade is that of the California-Arizona Pipe Line Company, which proposes to build a pipe line from the San Joaquin Valley, in southern California, through Arizona, to Cananea, Mexico, with branch lines running to Tucson, Jerome, Benson and Kingman, the object being to furnish fuel oil to smelters in those places, to take the place of high priced coal which they are now using. The projected line will be from 1800 to 2000 miles long, and it is proposed to lay it with 8-in. pipe, running 28 lb. to the foot. If this line should be built it would mean that over 150,000 tons of steel pipe will be needed. Inquiries for the line have not yet actually reached the mills, depending on whether the new company floats its bonds. The Philadelphia Company is in the market for 10 miles of 10 to 12 in. pipe. The general demand continues quiet, and pipe is not moving as freely as desired. Stocks held by mills and jobbers are heavy, and it will take some time before they have been reduced to the point that will require active buying again. Discounts are reported as being firmly maintained.

Boiler Tubes.—Some good sized orders for locomotive and boiler tubes are being placed, the demand from the railroads having shown a notable increase. New orders for merchant tubes are only fair.

Coke.—The leading coke producers have taken hold of the coke situation in earnest and a decided movement is under way to reduce the output. The Frick Coke Company in the past two weeks has blown out nearly 1200 ovens, the W. J. Rainey Company nearly 150 ovens, and others have blown out a large number. A sharp decrease in output has already resulted, and it will show a still further falling off, as more ovens are to be blown out this week. Best makes of furnace coke running under 1 per cent. in sulphur can be had at $1.70 to $1.75 per net ton at oven for prompt shipment, while on contracts for last half of the year $2 and under has been named. We continue to quote best makes of 72-hour foundry coke from $2.50 and up to $3 per net ton at oven.

Iron and Steel Scrap.—The scrap trade is in very un-

satisfactory condition, the demand being small, and prices have shown a decline of 25c. to 50c. a ton. Indications point to still lower prices, unless the demand soon materially improves. Dealers quote about as follows, per gross ton, for delivery at Pittsburgh or elsewhere as noted:

Heavy steel scrap, Steubenville, Follansbee, Monessen and Pittsburgh	$16.25 to $16.50
Heavy steel scrap, Sharon, Pa., delivery	16.00 to 16.25
No. 1 foundry cast	15.75 to 16.00
No. 2 foundry cast	14.50 to 14.75
Bundled sheet scrap, at point of shipment	13.25 to 13.50
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	17.25 to 17.50
No. 1 railroad malleable scrap	15.75 to 16.00
Grate bars	11.25 to 11.50
Low phosphorus melting stock	20.00 to 20.50
Iron car axles	26.00 to 26.50
Steel car axles	22.50 to 22.75
Locomotive axles	27.00 to 27.50
No. 1 busheling scrap	14.25 to 14.50
No. 2 busheling scrap	11.00 to 11.25
Old car wheels	15.50 to 15.75
Sheet bar crop ends	16.75 to 17.00
Cast iron borings	9.50 to 9.75
Machine shop turnings	11.50 to 11.75

We have not been advised of any sales of moment in the past week.

The offices of M. A. Hanna & Co., pig iron, ore and coke, have been removed to suite 1844, Henry W. Oliver Building, Pittsburgh.

The offices of Hickman, Williams & Co., T. Coleman Ward, resident manager, pig iron, ore, coke and alloys, have been removed from the German National Bank Building to rooms 2445-2447 Henry W. Oliver Building, Pittsburgh.

The Zug Iron & Steel Company, operating the Sable Iron Works, Pittsburgh, manufacturer of bar iron and iron and steel sheets, has appointed H. K. Curtin & Co., Real Estate Trust Building, Philadelphia, Pa., its selling agents in Eastern territory.

Chicago.

FISHER BUILDING, April 20, 1910.—(*By Telegraph.*)

An interesting event in the steel market this week is a conference of the plow manufacturers who are considering their bar requirements for the coming year. The merchant mills are sold further ahead than any other branch of the steel industry, and a stronger tone has developed in the bar market the past week. The mill men insist that there is no inside price and that 1.63c., Chicago, is the minimum to the largest buyers, with contracts of moderate size going at 1.68c., and small lots selling at 1.78c., Chicago. The new Gary merchant mills, two of which are now running double turn, will increase the production of bars in this district, but it is evident that this is one branch of the trade in which there is no overproduction. The bar iron mills, however, are not doing so well, as they depend chiefly on the railroads for their market, and for one reason or another the railroads are not buying as much material as they formerly needed in good times. The railroads are doing better, however, in their orders for bridge material, as there are inquiries pending for some 20,000 tons from Western roads, on which orders are expected this week. This will even up the bookings for fabricated material for April, as many large projects for steel buildings which are pending are likely to go over into May or June before contracts are closed. The scrap market is declining and some of the scrap dealers take a critical view of business conditions. Scrap, however, must follow to some extent the prices of new material, and the market is influenced by the fact that the production of pig iron and steel has caught up to the demands of the country, and the producers of primary materials have reached a point where they may have to do business on a narrow margin of profit for some time. The consumptive demand for copper is more active and large consumers have bought considerable quantities.

Pig Iron.—The Chicago market was reluctant to concede the decline in Southern iron to the basis of $12, Birmingham, and it was not until late last week that this price was quoted by any number of furnace interests. Some are now quoting $12 openly for last half, some are holding for $12.50, and a few still insist that $13 is their minimum. For the current quarter $12 is the going price. One lot of 3000 tons of No. 2 Southern was sold last week to a local manufacturing interest for prompt delivery at a slight concession from $12, but there is no general tendency to go below $12 on spot iron. There are more inquiries this week, and they seem to have a more genuine tone, running as high as lots of 1000 to 1500 tons from various foundry and manufacturing interests. Some business has been done, but not enough to make a real market, and the larger buyers are waiting now for $11 iron, which they insist will come as a result of furnace capacity in excess of consumption. The country is prosperous and the foundries are using more iron than ever before, but buyers take the view that the building of blast furnaces is going on at a greater rate than the growth of consumption, and the time has come for the producing interests to accept a small profit. The market for Northern iron is quiet, as the furnace interests are not aggressive in seeking business for last half and buyers are generally indifferent. There is an inquiry from a new steel foundry for 6000 tons of low phosphorus and there is a great deal of malleable and foundry iron to be bought for the last half in Chicago and Milwaukee territory. The following quotations are for April, May and June shipment, Chicago delivery:

Lake Superior charcoal	$19.00 to $19.50
Northern coke foundry, No. 1	17.75 to 18.25
Northern coke foundry, No. 2	17.25 to 17.75
Northern coke foundry, No. 3	16.75 to 17.25
Northern Scotch, No. 1	18.25 to 18.75
Southern coke, No. 1	16.60 to 17.10
Southern coke, No. 2	16.35 to 16.85
Southern coke, No. 3	16.10 to 16.60
Southern coke, No. 4	15.85 to 16.35
Southern coke, No. 1 soft	16.60 to 17.10
Southern coke, No. 2 soft	16.35 to 16.85
Southern gray forge	15.60 to 16.10
Southern mottled	15.35 to 15.85
Malleable Bessemer	17.25 to 17.75
Standard Bessemer	19.90 to 20.40
Jackson Co. and Kentucky silvery, 6%	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8%	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10%	21.90 to 22.40

(*By Mail.*)

Billets.—Supplies are easier to obtain from Eastern mills and consumers in this district are able to get concessions from the prices that have ruled heretofore.

Rails and Track Supplies.—The business that appears from Western roads for standard sections is going to Eastern mills, but not much inquiry is reported. In track supplies, however, the demand continues very good. While standard spikes have been quoted lower recently, track bolts are higher, owing to the fact that the demand exceeds the capacity of the mills. We quote standard railroad spikes at 1.80c. to 1.90c., base; track bolts with square nuts, 2.50c. to 2.60c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $27; 30 to 35 lb., $27.75; 16, 20 and 25 lb., $28; 12 lb., $29, Chicago.

Structural Material.—The railroads are becoming more active in the market and inquiries are pending for about 20,000 tons of bridge material on which it is expected that contracts will be closed this week. This will help out the order books of the fabricating interests for April, which might otherwise prove a light month, as business is slow on building projects. Meantime, small lettings by railroads are becoming more numerous. The Lackawanna Bridge Company has taken orders from the Northern Pacific for 288 tons of small bridges and the American Bridge Company has similar orders from the Sante Fé for 307 tons. The American Bridge Company also has an order from the Chicago & Northwestern for five 80-ft. turntables which will require about 200 tons. This company has also taken the contract for a highway bridge at St. Joseph, Mich., requiring about 250 tons, and an addition to the foundry of the National Brake & Electric Company at Milwaukee, 200 tons. A warehouse for Swift & Co. at San Francisco, Cal., 315 tons, was let to the Western Iron Works, which will use Bethlehem shapes. The mills report good specifications from fabricators for plain material. We quote plain material from mill, 1.73c. to 1.78c., Chicago; from store, 2c., Chicago.

Plates.—The plate mills are very comfortably booked with orders from steel car builders and are not able to furnish as satisfactory deliveries as the car men would like. The minimum Chicago price is practically 1.73c., and buyers seeking concessions find it necessary to place their business with Eastern mills, which are not so well booked. We quote mill prices at 1.68c. to 1.73c., Chicago; store prices, 2c., Chicago.

Sheets.—The market continues firm on blue annealed sheets, with the mills able to make a little better delivery, but concessions are reported from time to time on galvanized, due chiefly to the fact that spelter is lower now than when the differential between black and galvanized sheets was advanced last winter. There is a fair volume of new business. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 2.90c. to 3c.; No. 28 galvanized, 4c. to 4.10c.

Bars.—The National Plow Manufacturers' Association is holding a protracted meeting in Chicago this week, which may have an important bearing on the bar market. This association deals chiefly with questions of cost, and one of its purposes is to standardize the materials used by the plow manufacturers so as to facilitate deliveries from the mills and minimize extras. In many cases each plow manufacturer has a different design for some section rolled on a bar mill, where one section would answer the requirements of all. The plow men will undoubtedly confer more or less on the matter of contracts for bars for the coming year, and the outcome of the meeting is awaited with much interest by the steel men. Some of the plow manufacturers have already bought their bars for the last half, which practically means for a year, as the mills are nearly six months behind and specifications given in December on a contract of this character might mean delivery in the fol-

lowing May or June. The steel mills in this district insist that 1.63c. is their minimum for the most attractive business, with 1.68c., Chicago, as the going price on ordinary business. The bar iron mills are getting a little more new business, but the decline in scrap has brought a corresponding reduction in the price of iron bars. The wagon manufacturers are coming in with good specifications for tires and the railroads are also ordering more liberally. The hard steel bar business continues good. Subject to the usual delay in delivery of soft steel bars, we quote as follows: Soft steel bars, 1.63c. to 1.68c.; bar iron, 1.50c. to 1.60c.; hard steel bars rolled from old rails, 1.55c. to 1.60c., all Chicago.

Rods and Wire.—The jobbing trade in wire products is very good and the mills are doing better on specifications, which are now up to normal. The weakness in prices among jobbers has disappeared, as the heavy stocks they bought are going into consumption. Open prices have not been quoted as yet to industrial buyers for specifications beyond July 1. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

Merchant Steel.—One of the leading Eastern mills reports that its shipments of merchant steel into Chicago territory during March exceeded all previous records, both in quantity and value. It is understood that prices on the ordinary lines of agricultural steel will be about $6 per ton higher the coming year, in harmony with the corresponding advance in bars over the prices that were made a year ago.

Cast Iron Pipe.—The municipal letting of 1000 tons of water pipe at Evansville, Ind., last week went to the United States Cast Iron Pipe & Foundry Company. St. Louis is in the market for 2100 tons to be let this week, and other desirable municipal business is in prospect. There is a good run of orders from smaller municipalities as well as from the jobbing trade, and the railroads are steady buyers of culvert pipe. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $28.50; 6 to 12 in., $27.50; 16-in. and up, $26.50, with $1 extra for gas pipe.

Old Material.—The market is becoming congested and buyers are not showing much interest in the bargains that are offered them. No. 1 railroad wrought scrap shows a remarkable range in prices. Material of this grade offered by railroads has brought as high as $14.75, connecting line, which would make the delivered price about $15, but scrap graded by dealers as No. 1 railroad wrought has been offered as low as $13.50 for spot delivery. In the Chicago market there are many fine distinctions in the grades of material which lose their significance in a strong active market, but when prices are weak and supplies are plentiful, the buyers take their choice and the lower grades show a wide discrepancy in prices. There are a half dozen kinds of heavy melting steel in the Chicago market and this is true to some extent of No. 1 railroad wrought. Steel rails less than 3 ft. continue to bring a good price, and frogs, switches and guards command an unusual premium over heavy melting steel. Borings are lower and railroad malleable and cast scrap are also easier. Old car wheels are very hard to sell, as the foundries have large stocks and dealers do not see much prospect of turning them at a profit. Present prices are nominal on car wheels, as local foundries are out of the market. Following prices are per gross ton, delivered, Chicago:

Old iron rails	$18.50 to $19.00
Old steel rails, rerolling	17.50 to 18.00
Old steel rails, less than 3 ft.	16.25 to 16.75
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	16.50 to 17.00
Heavy melting steel scrap	14.25 to 14.75
Frogs, switches and guards, cut apart	14.50 to 15.00
Shoveling steel	13.75 to 14.25

The following quotations are per net ton:

Iron angles and splice bars	$16.00 to $16.50
Iron car axles	21.00 to 21.50
Steel car axles	22.00 to 22.50
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	13.00 to 13.50
Springs, knuckles and couplers	13.75 to 14.25
Locomotive tires, smooth	18.50 to 19.00
No. 1 dealers' forge	12.00 to 12.50
Steel axle turnings	10.50 to 11.00
Machine shop turnings	9.50 to 10.00
Cast and mixed borings	6.00 to 6.50
No. 1 busheling	12.00 to 12.50
No. 2 busheling	9.50 to 10.00
No. 1 boilers, cut to sheets and rings	10.50 to 11.00
No. 1 cast scrap	13.50 to 14.00
Stove plate and light cast scrap	11.50 to 12.00
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.00 to 12.50
Pipes and flues	10.75 to 11.25

Metals.—Considerable business is being done in copper this week and good inquiries are pending from large consumers. Buyers are more disposed to cover their requirements some distance ahead since the recent decline in prices and some of the transactions closed or pending run into large figures. Tin is a little higher. Spelter is practically unchanged on sales to casual buyers, but the inside price to large consumers is a shade lower than last week. We quote Chicago prices as follows: Casting copper, 13⅜c.; lake, 13⅝c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 33¾c.; small lots, 35c.; lead, desilverized, 4.40c. to 4.45c., for 50-ton lots; corroding, 4.65c. to 4.70c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.65c. to 5.70c.; Cookson's antimony, 10⅜c., and other grades, 9¾c. to 10¼c.; sheet zinc is $7.75, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13½c.; copper bottoms, 11¾c.; copper clips, 13¼c.; red brass, 12½c.; yellow brass, 10c.; light brass, 7c.; lead pipe, 4¼c.; zinc, 5c.; pewter, No. 1, 24c.; tin foil, 26c.; block tin pipe, 30c.

Philadelphia.

PHILADELPHIA, PA., April 19, 1910.

Irregularity is still noted in the demand for both crude and finished materials and the market has a softer appearance. Ruling quotations are, it is believed, being quietly shaded, but transactions lack definite confirmation. The coming meeting of the Eastern Pig Iron Association is expected to throw considerable light on the pig iron situation in this territory; it is reported from several sources that stocks of both foundry and basic iron are increasing and that some curtailment in production may result. The demand for finished materials is not strong. While quotations for heavy steel plates are fairly well maintained, structural shapes are easy. Billets are a shade lower, $30, delivered, now being quoted for open hearth rolling billets. Refined iron bars are easy at 1.50c., delivered, while old material has been shaded on small transactions in practically all principal grades.

Pig Iron.—While open quotations named by sellers are practically unchanged, there is little doubt that prices for most grades can be shaded for business of a desirable character. There is a growing disposition on the part of some producers to get down to the actual bottom of the market, rather than to continue holding at figures which result only in limited business. Such a move would, it is believed, bring about more normal buying conditions and have a strengthening effect on the general market. That buyers would take hold, if they believed that a real low level had been reached, is evident by the inquiries which have come out for large tonnages of foundry iron for second and third quarter delivery, which close very slowly, however, as prospective buyers do not appear satisfied that the present range of prices is at the bottom. The ruling quotations for standard brands of No. 2 X foundry, delivered in this vicinity, range from $17.75 to $18, although somewhat lower prices have been made at favorable delivery points. There are some sellers who are comparatively firm at the top price, being pretty well sold up for the second quarter; others, however, are not overly strong at the inside figure. Inquiries are before the trade for 1000 tons from a soil pipe maker, 1000 to 1500 tons from a large industrial concern, and 1000 tons from a machinery builder, as well as a number for smaller quantities. The bulk of the demand is for No. 2 X and No. 2 plain iron, although one of the larger blocks is for foundry forge. Cast iron pipe makers are considering purchases of some very fair quantities of low grade iron. Virginia producers, while they have been selling a trifle more freely recently, are not holding at the recent high level, $18 to $18.25, delivered in this territory, now representing the range for second quarter No. 2 X foundry, which price can in instances be done for third quarter delivery. There has been very little movement in forge iron; standard brands are nominally quoted at $16.50 to $16.75, delivered in this territory, while less well known irons can be had at 25 to 50 cents a ton under those figures. The demand for steel making grades is practically at a standstill. Basic iron is pegged at $17.50, delivered, for second or third quarter, and more offerings of prompt iron are noted, without, however, finding buyers, who would apparently only be interested at bargain prices. Low phosphorus iron is in light demand, but, owing to the limited supply of standard brands and the continued ore shortage, prices are firmly maintained. Quotations for delivery in buyers' yards, eastern Pennsylvania and nearby points, for shipment during the second and in instances the third quarter, range about as follows:

Eastern Pennsylvania, No. 2 X foundry	$17.75 to $18.00
Eastern Pennsylvania, No. 2 plain	17.25 to 17.50
Virginia, No. 2 X foundry	18.00 to 18.25
Virginia, No. 2 plain	17.75 to 18.00
Gray forge	16.50 to 16.75
Basic	17.50
Standard low phosphorus	23.00 to 23.25

Ferromanganese.—There has been no demand from consumers in this territory, quotations being nominally unchanged, at $41.50 to $42, Baltimore.

Billets.—The market is a trifle easier, due not particularly to a decreasing demand, but rather to larger supplies, owing to less urgent specifications on the part of some buyers. A fair amount of new business has developed in rolling billets, while the demand for forging billets has been quite active, with sales for third quarter delivery reported. Standard open hearth rolling billets for second quarter shipment are now quoted at $30, delivered in this vicinity, al-

though miscellaneous billets for prompt shipment can be had a shade under that figure. Forging billets are firm, at $32 to $34, Eastern mill, dependent on specification and analysis.

Plates.—Business is coming out on a fairly even basis, but still aggregates less than mill capacity. In a few instances contracts for moderate tonnages for deliveries extending up to October 1 have been made, but Eastern producers prefer not to take orders on which deliveries run beyond the second quarter. For business of an ordinary character Eastern mills quote 1.75c., delivered in this territory, on which they can usually make good delivery. In close competition, or where delivery is not a factor, 1.70c. can readily be done.

Structural Material.—Business does not come out freely even at the lower range of prices. Deliveries on plain shapes can be had easily within a few weeks from receipt of specifications, and there is more competition for desirable business. No large contracts have recently been placed, although several buildings are expected to be let in the near future. The hot metal bridge over the Schuylkill River, connecting Swedeland and Ivy Rock, is expected to be awarded during the week. Prices for both plain shapes and fabricated material are easy, the former being freely quoted at 1.65c. to 1.70c., dependent on tonnage and specification.

Sheets.—The immediate demand is a little less active, although mills in this territory are well supplied with orders. Prompt deliveries are still rather hard to get. Prices are firm, the following range representing the market for near future deliveries: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

Bars.—A good demand is reported for steel bars, but leading makers are unable to make deliveries inside of three months. Refined iron bars continue dull and prices are not strong, particularly when orders on which specifications are desirable are under negotiation. Steel bars are quoted at 1.60c. to 1.65c., delivered in this territory. Refined iron bars can be readily had at 1.50c., delivered, although some of the larger mills hold pretty firmly at 1.60c.

Coke.—The market is unchanged, notwithstanding the unfavorable labor situation in some districts. The bulk of the sales are of a prompt nature, consumers showing little disposition to enter contracts. Prices are still weak; some of the producers who have recently held prices above the market have reduced their quotations for foundry coke so that $2.50 to $2.75 per net ton, at oven, about represents the range for reasonable deliveries, although concessions are made in instances for spot shipment. Furnace coke for near future delivery is quoted from $1.65 to $1.85, at oven. For delivery in this territory the following prices, per net ton, are named:

Connellsville furnace coke	$3.90 to $4.10
Foundry coke	4.75 to 5.25
Mountain furnace coke	3.50 to 3.70
Foundry coke	4.35 to 4.85

Old Material.—A further decline in prices of the leading grades is noted, although usually on small transactions. Consumers of rolling mill grades, finding the demand for their products light, are not active purchasers. Steel makers, being pretty well stocked, are but meager buyers. Some small lots of heavy melting steel have, it is reported, been picked up by the buyer for the associated mills at reduced prices. Sales of several lots of low phosphorus scrap are reported at $21.50 and a shade over that figure. The following range of prices, while to some extent nominal, represents the market for near future deliveries in buyers' yards in this vicinity:

No. 1 steel scrap and crops	$16.00 to $16.50
Old steel rails, rerolling	17.50 to 18.00
Low phosphorus	21.50 to 22.00
Old steel axles	22.00 to 23.00
Old iron axles	28.00 to 28.50
Old iron rails	20.50 to 21.50
Old car wheels	16.00 to 16.50
No. 1 railroad wrought	18.25 to 18.75
Wrought iron pipe	15.25 to 15.75
No. 1 forge fire	13.50 to 14.00
No. 2 light iron	10.00 to 10.50
Wrought turnings	11.25 to 11.75
Cast borings	10.00 to 10.50
Machinery cast	15.75 to 16.25
Railroad malleable	16.00 to 16.50
Grate bars	13.00 to 13.50
Stove plate	11.00 to 11.50

The Kerr Turbine Company, Wellsville, N. Y., has arranged for representation in two more American and three foreign cities, as follows: San Francisco and Oakland, Cal., United Iron Works; London, Eng., Economical Gas Appliance Construction Company, Ltd.; Mexico City, J. H. Bloomberg; Sidney, N. S. W., A. F. Partridge. The Kerr Turbine Company now has active representatives in 26 cities. The use in Europe of American turbine units of the small sizes built by this firm would hardly seem to warrant representation on the other side, but numerous Kerr turbines have been sold in England alone, one customer there having bought seven on repeat orders.

Cincinnati.

CINCINNATI, OHIO, April 20, 1910.

Building projects of all kinds are coming forward, and local representatives of leading interests connected with building trades pronounce their April business quite satisfactory and increasing.

Pig Iron.—The chief topic of interest in pig iron circles is the reported buying Monday and Tuesday by the leading pipe interest. It is stated that between 25,000 and 30,000 tons have been contracted for, mostly Southern, Nos. 2, 3 and 4 foundry and forge, on the basis of $12, Birmingham, for No. 2, and a little bit lower for early delivery. The business is placed from Columbus, Ohio, and deliveries are to be made to all points and over the next four and five months. Details are carefully guarded, but it is believed that a new price of $10.75, Birmingham, has been made for forge. At the exceedingly low price made, furnace interests are requiring a proportionate amount of higher grades of foundry to be taken along with the forge and No. 4 foundry. Inquiries are few, but some large melters are coming into the market, notably stove makers and implement manufacturers. A deal involving between 4000 and 5000 tons of Northern and Southern for delivery to a large interest in Michigan is in negotiation. A large user of malleable is inquiring for 1500 tons for the last half delivery to a Northern Ohio plant, and a concern in the West is in the market for 500 tons for early delivery. As to prices there seems to be a more general feeling that the Southern situation is based on a $12 foundation, and for certain irons this price can undoubtedly be done for the remainder of the year, but $12.50 is still the minimum with a number of the largest interests. The Northern situation appears to be considerably the stronger, and while $16 at furnace has been shaded 25c. on acceptable business, the larger makers maintain the higher price as their minimum for the remainder of the year. There is no inquiry for either charcoal irons or high silicons. A large local foundry interest bought some off iron running 2½ per cent. in silicon and high in sulphur, and other foundries are beginning to look about them for last half requirements, believing the time to be propitious. It is generally conceded by the large agencies that the Southern situation is critical, that something drastic is brewing and that the present situation, if it does not beget a buying movement, cannot last longer than the end of the month. The continued silence of consuming interests in the face of the constantly descending scale of prices is mystifying furnace representatives who have heretofore started good buying movements with considerably less sacrifice on their part. Another week is bound to see the beginning of a curtailment in production, with the Northern producers probably taking the lead. For prompt delivery and through the second and third quarters, based on freight rates of $3.25 from Birmingham and $1.20 from the Hanging Rock district, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$15.75 to $16.25
Southern coke, No. 2 foundry	15.25 to 15.75
Southern coke, No. 3 foundry	14.75 to 15.25
Southern coke, No. 4 foundry	14.25 to 14.75
Southern coke, No. 1 soft	15.75 to 16.25
Southern coke, No. 2 soft	15.25 to 15.75
Southern gray forge	14.00 to 14.25
Ohio silvery, 8 per cent. silicon	19.70 to 20.20
Lake Superior coke, No. 1	17.70
Lake Superior coke, No. 2	17.20
Lake Superior coke, No. 3	16.70
Standard Southern car wheel	25.25 to 25.75
Lake Superior car wheel	22.25 to 22.75

(*By Mail.*)

Coke.—Aside from a recent contract by a Tennessee furnace interest for last half supply, there is little to report in furnace coke. A few furnaces that have been inconvenienced through the strikes have picked up some 100 and 200 tons in carload lots in the Connellsville field, and there is a little exchange business. The Pocahontas product is gradually gaining a foothold in this field. Pocahontas furnace grades are quotable at $2 to $2.25 per net ton at furnace and foundry $2.50 to $2.65. Wise County furnace is quotable at $1.75 to $1.90 and foundry for prompt delivery $2.35 to $2.65; on contract, $2.50 to $2.75. Connellsville foundry is quoted at $2.25 to $2.75 for prompt and on forward delivery $2.50 to $2.75. Connellsville furnace grades can be bought at $1.60 to $1.75 for prompt and at $2. to $2.25 on contract.

Finished Material.—Jobbers and sales agencies continue to report business excellent, but the mills are loath to quote on last half business, for which some inquiries are accumulating. The structural situation continues to improve, and architects and engineering concerns are busy with details of contemplated improvements. Bids are to be opened April 25 for the new engineering building of the University of Cincinnati, and for the nine-story building of the Isaac Fallers Sons Company at Eighth and Walnut street, 100 x 175 ft., of concrete. Bids on the new Victor Safe & Lock Company plant, according to new plans, were opened April 19. A small addition to the plant of the United States Printing Company in Norwood, including some steel canopies, are in the hands of contractors, and the American Diamalt Company, Riverside, is figuring on a one-

story addition. Sheets are strong and prices are being well maintained.

Old Material.—Dealers unite in stating that business is very much off. Such transactions as are noted consist mainly of exchange of old material for credit on purchases of cars and parts. Railroads are unwilling as a rule to accept offers of the dealers on scrap. Dealers are taking in material from the country dealers and collectors, but at very low prices. In the absenec of business the following dealers' quotations for material, delivered, Cincinnati and southern Ohio, are given as about representative of the market:

No. 1 railroad wrought, net ton	$12.75 to $13.00
Cast borings, net ton	7.00 to 7.50
Heavy melting steel scrap, gross ton	13.50 to 14.00
Steel turnings, net ton	9.00 to 9.50
No. 1 cast scrap, net ton	12.50 to 13.00
Burnt scrap, net ton	9.00 to 10.00
Old iron axles, net ton	18.00 to 18.50
Old iron rails, gross ton	17.50 to 18.00
Old steel rails, short, gross ton	15.00 to 15.50
Old steel rails, long, gross ton	16.00 to 16.50
Relaying rails, 56 lb. and up, gross ton	23.00 to 24.00
Old car wheels, gross ton	14.00 to 14.50
Low phosphorus scrap, gross ton	17.00 to 17.50
Low phosphorus scrap, gross ton	17.00 to 17.50

Birmingham.

BIRMINGHAM, ALA., April 18, 1910.

Pig Iron.—Quite a number of sales were quietly made the past week, and some were for good sized lots. Buyers are hanging back more or less, even as to making inquiries. It is generally understood that the representative of the leading pipe interest, who was recently in the district, left without placing a ton. It is also generally understood that sellers were not quite ready to meet his views as to price—for a concession from the $12 to $12.50 basis would leave very little, if any, profit for the producer. Some of the furnacemen continue to quote $12.50 to $13, at furnace, while certain brands are sold on a basis of $12 by others for prompt or second quarter delivery. Conditions on the whole are about the same as those of the previous week. Buyers seem to have adopted the plan of quiet buying, and several thousand tons for prompt and forward delivery have been bought in this manner that the public knows nothing about, as well as some of the furnace interests themselves. Such buyers seem to have felt the market pretty thoroughly by sounding different competitors, then "swooped" down at a time when the inquiry was supposed to have been a matter of history and bought considerable tonnage at the most attractive figures. In this way a steady undercurrent of orders has been flowing in, so that to-day there are really more orders on the books of sellers than has been anything like forecasted in the trade journals of the country, and this is particularly true of Southern iron. Some one is evidently going to be disappointed in the "game" before it shall have progressed much longer.

Cast Iron Pipe.—The past week developed several large inquiries and clearly demonstrated that there are quite a few substantial lettings for the immediate future. Now that pig iron has reached a level at which the producer must either sell or curtail his output, quite a good deal of interest is manifested in the finished product. Several Middle and Far Western cities are now receiving bids on their requirements, from which is expected some good business. Prices have not declined, though under certain circumstances are shaded slightly. Following prices, per net ton, f.o.b. cars here are reported: 4 to 6 in., $24; 8 to 12 in., $23; over 12 in., average of $22, with $1 a ton extra for gas pipe.

Old Material.—The scrap market is inactive, and about the only encouraging feature to it seems to be the fact that the seller is able now and then to dispose of a carload. Some of the dealers are practically making no sales, preferring to stock; while others are selling and at times at a slight concession from published prices. However, the following prices substantially represent the local market, per gross ton, f.o.b. cars Birmingham:

Old iron axles	$18.50 to $19.00
Old iron rails	14.50 to 15.00
Old steel axles	18.00 to 18.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	11.00 to 11.50
No. 1 country wrought	10.50 to 11.00
No. 2 country wrought	10.00 to 10.50
No. 1 machinery	12.00 to 12.50
No. 1 steel	11.00 to 11.50
Tram car wheels	11.50 to 12.00
Standard car wheels	13.00 to 13.50
Light cast and stove plate	9.00 to 9.50

Work is being pushed on the plant of the Birmingham Horseshoe & Rolling Mills Company at Gordon Heights, near Bessemer, Ala. The engineer in charge, E. L. Penruddocke, reports that a good showing in construction has been made thus far.

The finishing touches are being put on the plant of the Great Southern Automobile plant at Birmingham, and cars will be turned out within the next week or so.

The American Cast Iron Pipe Company, Birmingham, Ala., is making an addition to its office. The company's works are now being operated to full capacity.

St. Louis.

ST. LOUIS, April 18, 1910.

The recent rains have materially improved crop prospects in the Middle West, and in consequence confidence in prosperous conditions to prevail in this territory have been strengthened. Bank clearings continue to reflect a large volume of business and still show an excess over those of last year. Railroad developments, mainly in the Southwest, are growing in importance and number and in carrying them out a vast quantity of material will be required. It is very generally regarded, especially by iron merchants, that the only important factor lacking to render the iron and kindred business more satisfactory is that railroads shall increase their purchases in these lines up to the average of normal years, and it is believed that the prospect for this is improving. Building operations, both in this city and in this section, are of large volume and the outlook is good in this direction for the remainder of the season.

Coke.—We fail to note any large inquiry pending and two which were on the market have been withdrawn without being settled. Large buyers appear to be indifferent and in no haste to contract for future supplies and smaller consumers take it as wanted. Prices for coke are barely firm, but brokers claim that further concessions are not likely. We quote standard 72-hour foundry at $2.40 for spot and $2.50 for shipment over the remainder of the year, per net ton, f.o.b. oven Connellsville.

Pig Iron.—Complaint of dullness prevailed in this market pretty generally throughout the past week. No one of the sales agencies reported an inquiry reaching 1000 tons, though their mails brought the usual requests for keeping posted and salesmen speak of a growing interest both in and out of the city. Indications of keen watchfulness are becoming manifest and quite heavy buying is liable any day to follow any reliable sign of a turn in the market. The decline and expense of carrying have practically eliminated offerings of resale iron, since holders prefer to chance an improvement in conditions to accepting such offers as at present are being made, which are usually less than furnace figures. Business is mostly in Southern iron, covering sales from 250 to 500 tons for various shipment up to January, 1911. The fact that Southern iron can be delivered at Northern points for less than Northern furnace prices is noted. Prices have settled down to $12.50 for Southern No. 2 foundry for shipment over the last half, though some brands are held at $13. For spot shipment, $12 has been worked in some instances—all f.o.b. Birmingham. Southern Ohio is held at $16 and $16.50, f.o.b. furnace.

Lead, Spelter, Etc.—Lead is quiet at 4.25c.; spelter is dull at 5.40c., f.o.b. East St. Louis. Zinc ore is higher and held at $42 per ton, Joplin base. Tin is unchanged from last week; antimony steady; copper is 15c. per 100 lb. lower. The demand for finished metals for the week was good.

Old Material.—The market for scrap iron and steel is featureless. Such business as is passing is almost entirely confined to dealers. The only railroad list on the market was 1000 tons, offered by the Vandalia, which was closed out Friday. Relaying rails are very scarce and wanted at full price. Prices are unchanged, but with the exception of relayers, the entire list is weak and more or less nominal. We quote dealers' prices, per gross ton, f.o.b. St. Louis, as follows:

Old iron rails	$15.50 to $16.00
Old steel rails, rerolling	15.50 to 16.00
Old steel rails, less than 3 ft	13.50 to 14.00
Relaying rails, standard sections, subject to inspection	26.00 to 26.50
Old car wheels	15.00 to 15.50
Heavy melting steel scrap	13.50 to 14.00
Frogs, switches and guards, cut apart	13.50 to 14.00

The following quotations are per net ton:

Iron fish plates	$14.00 to $14.50
Iron car axles	21.00 to 21.50
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	13.00 to 13.50
Railway springs	12.50 to 13.00
Locomotive tires, smooth	16.50 to 17.00
No. 1 dealers' forge	11.00 to 11.50
Mixed borings	7.00 to 7.50
No. 1 busheling	12.00 to 12.50
No. 1 boilers, cut to sheets and rings	10.00 to 10.50
No. 1 cast scrap	12.50 to 13.00
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	12.00 to 12.50
Agricultural malleable	10.00 to 10.50
Pipes and flues	10.00 to 10.50
Railroad sheet and tank scrap	9.00 to 9.50
Railroad grate bars	9.50 to 10.00
Machine shop turnings	10.00 to 10.50

The Laclede Gas Light Company will erect a new retort house which will require 300 tons of structural steel and will be equipped with modern appliances.

The Kewanee Boiler Company, which has recently entered the St. Louis field, is enlarging its plant at Kewanee, Ill.

The Twinplex Mfg. Company, St. Louis, has been in-

corporated to manufacture and deal in hardware, capital stock, one-half paid, $50,000; incorporators, Thomas M. Ambler, George G. Floyd, William H. Ambler, C. Norman Jones and Herbert S. Gardner.

The Central Screen Mfg. Company, St. Louis, has been incorporated to manufacture wire screens; capital stock, one-half paid, $35,000; incorporators, W. L. Musick, E. L. Musick and R. J. Burhew.

The Typewriter Calculating Attachment Company, St. Louis, has been incorporated, capital stock, fully paid, $1,000,000; incorporators, George D. Barnard, D. B. Hussey, James M. Bull, J. C. Mears, W. F. Obear, A. J. Pidding and others.

The John T. Nolde Mfg. Company, St. Louis, has been incorporated to manufacture dental tools, &c.; capital stock, $10,000; incorporators, John T. Nolde, E. A. Nolde and C. W. Wagner.

The Moline-Bettendorf Bridge Company, Moline, Ill., has been incorporated to construct and maintain bridges over the Mississippi River; capital, $100,000; incorporators, William P. Bettendorf, William Butterworth, J. W. Bettendorf, Edward H. Van Petten and William A. Meese.

Cleveland.

CLEVELAND, OHIO, April 19, 1910.

Iron Ore.—A little inquiry has come from Eastern furnaces. Sales are limited to an occasional small lot. Many of the furnace interests that did not buy all of their expected requirements early in the season will probably find that they will have all of the ore that they need, owing to the slackening in the demand for pig iron. While several of the ore firms have commenced lake shipments, many consumers are in no hurry to receive their ore and the early movement is not expected to be heavy. Prices continue firm. We quote as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—Only a limited amount of business is being placed. Some inquiries for foundry iron for the last half are coming out, but consumers are feeling the market carefully and are slow in placing contracts. Prices are weak. There is a general feeling that the situation will not improve until production is curtailed, and the blowing out of several stacks is under consideration. Some consumers bought pretty heavily a few months ago when conditions were satisfactory and are now holding back shipments on considerable tonnage. Because of these holdups a large amount of iron is being piled in furnace yards and there is no demand for spot iron to take this surplus. Southern iron appears to be a little more active in this territory at present than Northern. We note the sale of 1000 tons of Southern to a local consumer on the basis of $12.50, Birmingham, for No. 2 for the last half. No. 2 Southern for spot shipment is being offered at $12, Birmingham. The sale of several hundred tons of No. 2 Northern is reported to a foundry near Cleveland by a Valley furnace at about $16 at furnace for the last half. A local foundry is in the market for 2000 to 3000 tons and at Johnstown, Pa., a manufacturer has an inquiry out for 2000 tons of foundry, both inquiries being for the last half. In the Valley, No. 2 foundry is quoted at $15.50 to $15.75 for spot and second quarter delivery, and $15.75 to $16 for the last half. For spot shipment and the second quarter we quote, delivered, Cleveland, as follows:

Bessemer	$18.40
Northern foundry, No. 1	$16.75 to 17.00
Northern foundry, No. 2	16.40 to 16.75
Northern foundry, No. 3	16.15 to 16.40
Gray forge	16.15
Southern foundry, No. 2	16.35 to 16.85
Jackson Co. silvery, 8 per cent. silicon	21.05 to 21.55

Coke.—The market is very quiet, but prices are stationary. The only demand is for small lots for prompt shipment. We quote Connellsville furnace coke at $1.85 to $2 per net ton, at oven, for spot shipment and $2.15 and $2.30 on contract. Connellsville 72-hr. foundry coke is held at $2.50 for prompt shipment and $2.75 to $3 on contract.

Finished Iron and Steel.—While the volume of business is not heavy, the general situation is regarded as satisfactory. The easing up during the past few weeks has resulted in an improvement in deliveries, except on steel bars, on which the mills are not promising shipments within four months or longer. The volume of specifications for steel bars continues good, and some new business is coming out, although there is not so much demand for bars for quick shipment as there was a month or two ago. Many of the implement makers have not yet placed contracts and some of the mill agencies are trying to hold this business off until later. The implement makers report business very satisfactory and the prospects for the year exceedingly bright. Steel bars are firm at 1.45c. to 1.50c., Pittsburgh. The demand for structural material continues to improve. Mills are getting a better volume of specifications from fabricators on contracts. Considerable new business in small lots is coming out and a large amount of new work is being figured on by architects. Good deliveries can be made by some of the mills. The price is firm at 1.55c., Pittsburgh. There is a fair demand for plates in small lots, on which deliveries can be secured in about two weeks. Competition is keen and the 1.55c., Pittsburgh, price is being shaded to 1.50c. by some of the mills on desirable orders. An Eastern mill that does business in this territory is now meeting the 1.55c., Pittsburgh, price for prompt shipment. The demand for sheets is not active. The market is weak and buyers are holding off. Prices on black and galvanized sheets are being shaded $1 a ton for immediate specifications. Good deliveries can be had except on blue annealed sheets. The demand for forging billets is fair. The demand for shafting is still heavy and prices are very firm. The demand for light rails for coal mines has improved, orders being mostly for car lots. Mills are meeting less competition than usual from mills that reroll rails. The demand for iron bars is only fair, but local mills are well filled with specifications. We quote iron bars at 1.50c. to 1.55c., Cleveland.

Old Material.—The market is weak and dull. There has been a further decline in prices of 25c. to 50c. a ton on several grades. Low prices are not tempting consumers to buy beyond their present needs, the only demand being in very small lots. The outlook is far from promising, and dealers having large stocks in yards feel that they will have to hold these stocks until fall to sell at a profit. They are doing some speculative buying for future delivery. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$15.50 to $16.00
Old iron rails	17.50 to 18.00
Steel car axles	22.00 to 22.50
Heavy melting steel	14.25 to 14.75
Old car wheels	16.00 to 16.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	13.50 to 14.00
Railroad malleable	15.00 to 15.50
Light bundled sheet scrap	10.50 to 11.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.50 to $22.00
Cast borings	7.50 to 8.00
Iron and steel turnings and drillings	8.50 to 9.00
Steel axle turnings	11.00 to 11.50
No. 1 busheling	12.50 to 13.00
No. 1 railroad wrought	14.75 to 15.25
No. 1 cast	13.25 to 13.50
Stove plate	11.50 to 12.00
Bundled tin scrap	11.00 to 11.50

San Francisco.

SAN FRANCISCO, CAL., April 13, 1910.

A gradual increase of activity is noted in some finished products, but on the whole there is no improvement over the latter part of March. Pipe, both cast iron and the larger sizes of steel, is in better demand than usual, with indications of a heavy tonnage in both departments during the summer. Some very fair orders have also been booked for plates, and numerous inquiries are coming in for delivery during the next few months. The movement in other lines, however, is almost entirely of a jobbing nature. The demand for sheets has fallen off materially, and while there is a good inquiry for bars the volume of business actually booked is small. Local interests are able to take care of all requirements of merchant pipe outside of the oil fields, and are not yet inclined to replenish their stocks. There is less activity in structural material than at any time since 1906, no business of magnitude having been closed for several weeks, and fabricating prices are accordingly weakening. The present outlook in San Francisco is not encouraging, though a good volume of business is in prospect in the other cities of the Coast.

Bars.—There are several large inquiries in the market at present, but there is little prospect of any large tonnage being ordered from rolling interests in the immediate future, as this market is heavily stocked with foreign material. The principal demand locally is for reinforcing bars, which were rather quiet up to the first of the month. There is a fair jobbing movement, however, of both iron and steel bars, which the smaller manufacturing interests are buying from store in view of immediate requirements. Fifteen hundred tons of foreign bars arrived last week. Prices are firmly held on all descriptions, bars from store, San Francisco, being quoted at 2.50c. for steel and 2.30c. for iron.

Rails.—The principal requirements for extensions this summer appear to have been provided for last month, as few large orders are being placed for standard sections at present. There is some business in prospect, but it is of a rather indefinite nature. If steps are taken for the completion of the Ocean Shore Line several thousand tons will be required for that project, and it is believed that orders will be placed shortly for an interurban line in the San Joaquin Valley. Light rails are moving freely, but mostly from store. A considerable tonnage of foreign light rails is expected here within a few weeks.

Structural Material.—The situation is discouraging to local fabricators, as the greater part of the work on hand during the winter has been completed, and there is now scarcely any important work on hand. Nothing more has been heard from the few large jobs which were figured on recently, and nothing is coming up in this city except work

of the smallest class. The record of building permits shows an increase of about $200,000 during March, but the total is insignificant in comparison with the same month in 1907 or 1908, and only a few of the larger buildings require any structural steel. A number of large jobs are in prospect in other cities, but few are being figured at present. The Mortenson Construction Company has a contract for 60 tons, Bethlehem shapes, for the Baldwin building, and a few other contracts of about the same importance have been let. There is an inquiry for about 160 tons for the Whittell building, and bids have been taken on the Steinhart apartment house, 100 tons. Plans are being made for a ten story building for the Realty Syndicate and the Security Savings Bank building in Oakland, both of which will aggregate about 1200 tons. Plans have been adopted for a large court house at Fairfield, Cal. Bids will be taken May 9 for 300 steel cells with window guards, &c., for a new state prison at Carson, Nev. A bond election is to be held shortly in Tehama County, Cal., to provide for a new court house and two large bridges. Plans are being made for a six story steel building for Maegley & Tichenor at Portland, Ore. An award is expected at any time on the two large buildings on which figures have been made. Beams and channels, 3 to 15 in., are quoted at 2.70c., from store, San Francisco.

Pig Iron.—There are various rumors regarding the contract of the Western Steel Corporation of Seattle for Chinese pig iron, one being that the corporation controls the entire output of the Hang Yang furnaces, and will sell nothing grading as No. 2 foundry iron under $28, but that figure is not being paid for it in this market. The local business in all descriptions of foundry iron remains quiet, and few of the foundries except those operating on municipal work are running at anything like full capacity. Local iron molders are now working eight and one-quarter hours a day, and after next June the day will be reduced to eight hours, placing the San Francisco industry at a serious disadvantage. The operators are accordingly very slow to place contracts for delivery next fall and winter, though the importers are anxious to dispose of the tonnage brought in the sailing vessels from Europe. For May-July loading, to arrive next fall or winter, importers are asking $23 to $23.50 for English foundry iron, $25 to $25.50 for Scotch. Some Continental foundry iron held in warehouse here is offered as low as $21. Southern foundry iron is valued at $23 to $23.50.

Cast Iron Pipe.—There is more inquiry for cast iron pipe this spring than for several years, and the volume of business actually booked is increasing steadily. Several large contracts have been taken in Oregon and Washington. A lot of gas mains are being laid in the cities of Everett and Tacoma, Wash., and extensions are to be installed at Marshfield, Ore. Los Angeles is also ordering heavily for the new water system, and a large order is in prospect for extensions to the system of the San Francisco Gas & Electric Company. The town of Healdsburg, Cal., has ordered 1850 feet of 6 in. pipe from the United States Pipe Company. Several other municipalities in this State are preparing for the extension of their water systems, or the replacement of those in existence, during the summer. The Yakima Gas Company is working on a project to lay 10 miles of pipe in Ellensburg, Wash. San Francisco will let another contract for 1,000 tons of cast iron specials for the high pressure system April 20. The work will probably go to a local foundry.

Merchant Pipe.—The principal tonnage is being purchased for the oil fields, several large orders having been booked since the first of the month. The increased production, caused by the completion of several large wells, emphasizes the necessity for additional pipe lines, which will be installed as rapidly as possible. Prospects of a heavy tonnage for the coming summer are becoming more certain every day. The smaller sizes of merchant pipe are not yet moving except in a distributive way, but a heavy tonnage has gone from the local warehouses within the last few weeks, and the smaller consumers are still ordering very freely. Dealers are still overstocked, but with a continuation of the present demand they will be in the market again before the end of the second quarter. The A. B. Corey Company of Utah has taken a contract for laying a 28 mile pipe line for the Southern Pacific Railroad to supply desert watering stations.

Old Material.—Cast iron scrap is kept well cleaned up, as there is no excessive quantity coming into the market, and all offerings are readily taken by the foundries, prices remaining firm. There is no heavy accumulation of steel melting scrap, but some large lots of old rails and various kinds of rolling scrap are coming into the market. Melting scrap is lower, but the coast rolling mills are in the market for rails and wrought scrap, which are firm at an advance. Quotations are as follows: Cast iron scrap, $18 to $18.50 per gross ton; steel melting scrap, $10 per gross ton; railroad wrought scrap, $14 per net ton; rerolling rails, $14 per net ton; busheling scrap, $10 per net ton.

The Rudgear-Merle Company, San Francisco, expects to start its rolling mill shortly on small bars and angles rolled from old rails.

The California Industrial Company, Los Angeles, is expected to start its eight-inch mill within the next month.

John Elliott is preparing to build a foundry at Sacramento, Cal.

The Los Angeles Steel & Malleable Iron Company has been incorporated at Los Angeles, with a capital stock of $1,000,000, by C. J. Pearson, I. H. Russell and others. The company proposes to build a factory at San Pedro or Wilmington for the manufacture of a patent rail joint device.

The Olympic Foundry & Machine Works, Tacoma, Wash., recently destroyed by fire, will be rebuilt and enlarged immediately.

Wm. Hammond, Warren, Pa., has secured concessions from the Mexican government for erecting a large factory for steel tank work, &c.

German Iron Market.

BERLIN, April 7, 1910.

The best that can be said about the iron market is that there has been practically no change within a fortnight. That is equivalent to saying, however, that the position is relatively strong, in view of the weaker tendency in America, Belgium and other countries. The news from Belgium, for example, has grown decidedly less favorable during the past few weeks, there having been an all around scaling down of prices during that time. Belgian bar iron, it is reported, is now offered for export at 5 to 6 francs lower than the highest prices reached this year.

In Germany prices have been well maintained. In no cases have any reductions been adopted by trade combinations; only where dealers overstocked themselves with bars and scrap some months ago are price concessions being given. To-day the bar convention met at Dusseldorf and voted to begin taking contracts for the third quarter at unchanged prices. It had been intimated up to a quite recent date that a moderate price advance would be adopted. That this was not done may be taken as a recognition of the changed position in other countries.

One of the best indications of the strength of the position of the German market is the continued heavy production of iron and steel. The make of pig iron in March, as announced to-day, was 1,250,184 metric tons, which beats all previous records by a considerable margin. The month of January had till now held the record with a production of 1,166,000 tons. The March production compares with an output of 1,073,116 tons for March, 1909. The gain in production for the first quarter of the year was about 475,000 tons, or above 15½ per cent.

The shipments of the Steel Syndicate in March were unusually heavy, having amounted to 588,000 tons, which compares with only 396,846 tons in February. It must be mentioned, however, that heavy shipments are usual in March, as the business year of the syndicate ends with that month and the works are exerting themselves to their utmost to clear up their year's engagements. The figures just given are divided between the different classes of products as follows: Structural shapes, 244,000 tons, against 144,000 tons in February; rails and other trackage material, 176,000 tons, against 115,600, and semi-manufactured steel, 168,000 tons, against 137,000. The syndicate made a partial readjustment of allotments, beginning with this month. It provides for an increase of 58,000 tons in the three classes of products just mentioned and 40,000 tons in other products.

A report on the state of trade in the Silesian District represents the steel mills as working at their utmost capacity to keep up with orders. Steel material for further manufacture is described as scarce, and the pig iron trade is feeling the impulse of this activity in steel. The market for plates, both heavy and light, is stronger.

The German machinery trade is doing a heavier export business this year than in 1909, but not so large as in 1908. Exports for the first two months of the year amounted to 49,400 tons, compared with 46,000 tons last year. These figures apparently do not include electrical machinery and appliances, in which the export trade has been uncommonly active; for the two months such exports amounted to 14,195 tons, or a gain of 5666 tons. The value of electrical exports was $8,600,000, compared with $5,580,000 last year.

The Imperial Statistical Office has just given out the mineral and metal statistics of the empire for last year. The figures for production in the iron trade are as follows: 25,505,000 metric tons of iron ore, against 24,278,000 tons in 1908; 12,626,000 tons of pig iron, against 11,805,000 tons; finished soft steel products, 8,606,000 tons, against 8,128,000 tons.

The Gutshoffnungshütte of Oberhausen is this week celebrating its centenary, being the oldest of all German iron works. Frederick the Great granted the concession for it as early as 1781, but it was not built till 1810. It was a private firm till 1873, when it was incorporated. It holds allotments of 586,000 tons of steel in the steel syndicate. Only four other companies have larger allotments.

Buffalo.

BUFFALO, N. Y., April 19, 1910.

Pig Iron.—The market is exceedingly quiet. Such new business as has come in is principally for small lots of foundry grades. A few quotations for pipe iron have been asked for and there has been a moderate inquiry for malleable. Consumers, however, are interested only when exceptionally low prices are obtainable, and furnacemen are not solicitous for business at the present level. A slack interval is the consequence. The range of prices for all grades of foundry, and for malleable and basic comes between $16 and $17, except No. I X foundry, the maximum for which is only 25c. above this range. We quote as follows for second and third quarter delivery, per gross ton, f.o.b. Buffalo:

No. 1 X foundry	$16.75 to $17.25
No. 2 X foundry	16.50 to 16.75
No. 2 plain	16.25 to 16.50
No. 3 foundry	16.00 to 16.25
Gray forge	16.00 to 16.25
Malleable	16.50 to 17.00
Bessemer	17.50 to 18.00
Basic	16.50 to 17.00
Charcoal	19.50 to 20.00

Coke.—There is an unusually good demand for coke at the present time, due in some measure to the temporary readjustment of orders on account of the coal miners' strikes.

Finished Iron and Steel.—The demand continues heavy for bars and cold rolled and cold drawn material. Prices on bars are firming up, the principal portion of business done being at 1.50c., Pittsburgh; purchasers find 1.45c. obtainable only on the most desirable business. The demand for plates is good. No important lettings of structural contracts have been made in this territory during the week. Prices are a little easier where large propositions are concerned. Contractors are figuring on the steel for the five-story addition to the City Hospital, Rochester, which will require 350 tons of structural steel and some cast iron columns. Bids are to be received the latter part of the month for the State Normal School at Oswego, N. Y., requiring about 500 tons.

Old Material.—There is a weaker tendency, in sympathy with eastern Pennsylvania and Pittsburgh markets. No business is being transacted in any lines beyond a few carload lots. Consumers are holding off, except for very small lots for immediate needs, and are not taking material very freely on contracts. Prices are nominally unchanged, there being an insufficient volume of business done to indicate any decided change from last week's schedule. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$15.25 to $15.75
Low phosphorus steel	19.50 to 20.00
No. 1 railroad wrought	16.50 to 17.00
No. 1 railroad and machinery cast scrap	15.50 to 16.00
Old steel axles	19.50 to 20.25
Old iron axles	23.00 to 23.50
Old car wheels	16.00 to 16.50
Railroad malleable	15.50 to 16.00
Boiler plate	13.00 to 13.50
Locomotive grate bars	12.00 to 12.50
Pipe	12.50 to 13.00
Wrought iron and soft steel turnings	8.50 to 9.00
Clean cast borings	7.75 to 8.25
No. 1 busheling scrap	13.50 to 14.00

Metal Market.

NEW YORK, April 20, 1910.

THE WEEK'S PRICES.

Cents per pound.

	Copper.			Lead.		Spelter.	
April.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
14	13.00	12.87½	33.00	4.40	4.25	5.60	5.45
15	13.00	12.87½	33.00	4.40	4.25	5.60	5.45
16	13.00	12.87½	....	4.40	4.25	5.60	5.45
18	13.25	12.87½	32.95	4.40	4.25	5.60	5.45
19	13.25	12.87½	32.95	4.40	4.25	5.60	5.45
20	13.25	12.80	33.05	4.40	4.25	5.60	5.45

The recent reduction in the price of lake copper brought on a heavy buying movement, as a result of which the price of lake copper is higher again, but electrolytic is not so strong. Some good sales of tin have been made, but the trading has been only between dealers. Buyers are taking no interest in spelter and lead.

Copper.—It is estimated that about 30,000,000 lb. of copper has been sold during the last 10 days at from 13c. to 13¼c. for lake and 12.87½c. to 13c. for electrolytic. Some people in the trade go so far as to assert that fully 40,000,000 lb. was sold. It is certain that the move of the Calumet & Hecla Company in dropping its price to 13c. resulted in some heavy sales of its holdings, and on Monday, when its price was edged back to 13¼c., it was known that the company had succeeded in unloading a large amount of its surplus stock. Some large interests have contracted for the entire supply available for delivery prior to June 1, and the buying movement has partly ceased for the time being, although some scattered orders are being placed by people who were unable to get their wants filled at the low price of last week. Electrolytic is not so strong as lake, nor was the buying so heavy in that grade, the major portion of the sales mentioned above having been for lake. To-day lake copper was held firmly at 13¼c., while electrolytic was offered in some quarters at 12.80c. The fortnightly statistics of April 15 show a decrease in the visible supply of copper abroad of 2,737,000 lb., as compared with April 1, and a decrease of 8,713,600 lb. from February 15. The exports of copper so far this month have been decidedly light, amounting only to 7045 lb. Spot copper was sold in London to-day for £56 10s. and futures went at £57 10s. The sales amounted to 1400 tons of spot and 2,600 tons of futures. The market closed with prices strong.

Pig Tin.—On the afternoon of April 13 there was some good business in pig tin. It is estimated that fully 300 tons changed hands, but the trading was mostly between dealers. A large part of this was for May delivery at all the way from 32.50c. to 32.62½c. This was the only day in the week there was any great trading, but it sent prices upward, and the following day sales were made at 33c. Since then, however, the market has been slipping off again, and it has been decidedly quiet. Dealers can hardly understand the absence of consumers from the market. The Metal Exchange reports the arrival of pig tin so far this month to have been 3510 tons, and there are 1385 tons afloat. In London to-day spot tin brought £150 5s. and futures were sold for £151 10s. The sales were 100 tons of spot and 300 tons of futures. The market closed easy. In New York this afternoon pig tin was sold for 33.05c.

Tin Plates.—The tin plate situation is unchanged. The building trades are asking for only a little material, but the mills are still crowded with orders. The price in New York is $3.84 for 100-lb. coke plates. The foreign market is not changed and Swansea plates are still quoted at 13s. 1½d.

Lead.—Consumers are still holding off and the market is strangely quiet for this time of the year. Some small amounts of lead are being sold, but those who are in need of the metal are buying only as they use it. There seems to be an impression among the consumers that sellers will have to make a reduction shortly. The latter have been investigating consumption, however, and they find that a great deal of lead is being used. It seems apparent that consumers were holding more reserve stock than those who have the metal to offer have figured on. Lead is now selling at 4.40c., New York, and 4.25c., St. Louis.

Spelter.—Spelter is uninteresting. There is but little being sold and the price continues at 5.60c., New York. This is a nominal price, however, and it is thought by some people in the trade that a buying movement would send it upward.

Antimony.—Antimony is weak and prices are more or less nominal, as there is some talk of shading. Hallett's is quoted at 8.25c. and Cookson's at 8.37½c. Other brands can be had at 7.50c.

Old Metals.—The market is steady. Dealers' selling prices are quoted as follows:

	Cents.
Copper, heavy cut and crucible	12.50 to 12.75
Copper, heavy and wire	12.25 to 12.50
Copper, light and bottoms	11.25 to 11.50
Brass, heavy	9.00 to 9.25
Brass, light	7.50 to 7.75
Heavy machine composition	11.75 to 12.00
Clean brass turnings	8.25 to 8.50
Composition turnings	10.00 to 10.25
Lead, heavy	4.15 to 4.25
Lead, tea	3.90 to 4.00
Zinc scrap	4.50 to 4.75

New Structural Mill for the Illinois Steel Company.—The Standard Engineering Company, Ellwood City, Pa., has secured an important contract from the Illinois Steel Company for its South Chicago works, for a complete electrically driven structural mill, composed of five stands of 24-in. and three stands of 21-in. rolls, seven stands being driven by a heavy motor through large bevel gears, and one by a smaller industrial motor. Roller tables connect the mill with hot beds. This mill is expected to be ready for delivery in six months. The Standard Engineering Company is also building for the Indiana Steel Company, Gary, Ind., an electrically operated run-out table for its 60-in. universal plate mill. It has numerous contracts on hand for pipe machines.

The Modern Machinery & Engineering Company, 309 Schofield Building, Cleveland, T. F. Ahern, manager, will move its office to 1514 Ford Building, Detroit, Mich., May 1. This company is selling agent for the Potter & Johnson Company, Pawtucket, R. I. In addition to the Detroit office a demonstrating shop will be fitted up.

New York.

NEW YORK, April 20, 1910.

Pig Iron.—Several New England buyers of pig iron have been in the market the past week. In one case 1000 tons of No. 2 foundry was bought for delivery in the second half to a Massachusetts foundry. The business went to the Pittsburgh district at $18.25, delivered. Two sales, one of 500 tons, were made for Connecticut delivery, the buyers being located in Hartford and Bridgeport. Northern makers took the business in both these instances. Prices have shown considerable variation, brands customarily used being bought at prices considerably above the bids of some weak sellers, while furnaces have been willing to make concessions to move accumulated iron. Eastern Pennsylvania producers in general are not willing to sell freely at the prices established by the offers of competitors in other districts, some of them being now close to their cost line. On the other hand, buyers are not satisfied that the low point has been reached and therefore are limiting their purchases. Increased stocks are expected to be shown at the meeting of the Eastern Pig Iron Association at Philadelphia to-day. Some further buying is reported by Eastern pipe foundries. With Southern gray forge at $11, Birmingham, some of them have secured iron at $15.20 at Delaware River points. We quote Northern iron at tidewater as follows: No. 1, $18 to $18.25; No. 2 X, $17.50 to $17.75; No. 2 plain, $17.25 to $17.50. Southern iron is quoted at $17.50 to $17.75 for No. 1 and $17 to $17.25 for No. 2.

Steel Rails.—Rail orders reported this week include 12,000 tons for the Lake Shore and 5000 tons of 75-lb. ferrotitanium rails for the Nickel Plate, both taken by the Lackawanna Steel Company. Of the Boston & Maine contract 11,000 tons of open hearth rails will be furnished by the Pennsylvania Steel Company. About 10,000 tons more will be placed. The St. Louis, Brownsville & Mexico has bought 2000 tons of 80-lb. rails from the Pennsylvania Steel Company.

Finished Iron and Steel.—Just at present interest is centered in prospects from the railroads. It is known that many of them have good sized contracts soon to be placed, although they have been loath to admit it. Their needs in bridge material are now coming forward prominently, and decisions are expected shortly on several large orders. Probably this week the New York, New Haven & Hartford will make its award on the bids which have been received for 3000 tons. Also still pending are 5000 tons for the Chicago Great Western and 6500 tons for the Great Northern, on which decisions should be reached this week. As yet there has been no decision on the 6000 tons for the Oregon Short Line, but it is believed that this, too, will be settled in the near future. The same is true of the 750 tons required by the Lake Shore. Several other roads are likely to issue specifications very soon. The American Bridge Company secured the order from the Pittsburgh, Shawmut & Northern as announced in the Pittsburgh report on another page. It has developed that the New York Central's Merchants and Manufacturers' Exchange Building in New York City will require 9400 tons, which is somewhat in excess of the original estimate, and the award or awards, for there is some prospect that the contract will be divided, are expected to be announced within a day or two. Among building contracts pending or inquired for are the Hamilton Bank in Chattanooga, Tenn., for which bids on the general contract will go in next Monday, to require a good tonnage; the New England Telegraph & Telephone Building in Boston, for which the general contract bids are in, and about 1700 tons of steel will be required; and the Oswego Normal School, Oswego, N. Y., for which prices are being asked for somewhere around 400 tons of steel. The Lackawanna Bridge Company secured the Hackensack River bridge for the Erie Railroad, 850 tons, and the Hay Foundry & Iron Works the loft building at Riverside Drive and 157th street, New York, 1200 tons. The McClintic-Marshall Construction Company has the River Furnace & Dock Company's work at Cleveland, requiring 750 tons; the Girard Iron Company's building at Girard, Ohio, 500 tons, and a building for the Thomas Steel Company at Niles, Ohio, 450 tons. Milliken Brothers, Inc., has taken a power house for the Portland Railway Company, Portland, Ore., 250 tons, and a loft building in New York City of 1000 tons. The Eastern Steel Company has secured a theatre in Salt Lake City requiring 450 tons, and the Alfred E. Norton Company 1000 tons of steel for a loft building on West Twenty-seventh street, New York. The steel bar interests of the East are not so much concerned with the business from the implement makers as are those of the West, but are finding it difficult to catch up on their deliveries to their regular trade. The bar iron situation continues about the same; the volume of orders taken is good, and, sentimentally at least, things look better. The plate trade is quiet. Prices are quoted as follows: Plain structural material and plates, 1.66c. to 1.71c.; steel bars, 1.61c. to 1.66c., and bar iron, 1.60c. to 1.70c., all New York.

Bolts and Rivets.—The manufacturers of carriage and machine bolts, lag and coach screws and structural rivets on April 19 at the regular monthly meeting reaffirmed prices, no changes being made in any of these goods. A good business is reported, and the market is steady.

Cast Iron Pipe.—The letting of 9000 tons for the Brooklyn high pressure service, which had been advertised for April 20, has been postponed without date. On April 28 a contract is to be awarded for 3800 tons of 36-in. flexible joint pipe for Brooklyn. It is understood that only three manufacturers are in a position to furnish pipe of this character. The general demand from private water and gas companies continues at about the usual rate for the season. Some manufacturers are stiffening up their prices on small sizes, being well filled with this class of work. Quotations are continued at $25.50 to $26 per net ton, tidewater, for carload lots of 6-in.

Old Material.—The market is stagnant, while offerings are heavy. From present appearances the supply coming from the railroads will not seriously diminish this spring. Other producers of scrap are also steadily offering accumulations. Consumers appear uninterested and the market therefore shows a downward tendency. The following quotations are per gross ton, New York and vicinity:

Rerolling rails	$14.00 to $14.50
Old girder and T rails for melting	13.50 to 14.00
Heavy melting steel scrap	13.50 to 14.00
Relaying rails	22.00 to 22.50
Standard hammered iron car axles	24.50 to 25.00
Old steel car axles	19.00 to 19.50
No. 1 railroad wrought	16.00 to 16.50
Wrought iron track scrap	14.50 to 15.00
No. 1 yard wrought, long	14.50 to 15.00
No. 1 yard wrought, short	14.00 to 14.50
Light iron	8.00 to 8.50
Cast borings	8.50 to 9.00
Wrought turnings	10.50 to 11.00
Wrought pipe	13.50 to 14.00
Old car wheels	14.50 to 15.00
No. 1 heavy cast, broken up	14.00 to 14.50
Stove plate	11.00 to 11.50
Locomotive grate bars	10.50 to 11.00
Malleable cast	14.50 to 15.00

Iron and Industrial Stocks.

NEW YORK, April 20, 1910.

The stock market has been firm, but not specially active, and fluctuations have usually been within narrow limits. A notable exception was Steel Foundries, which rose quite sharply on dividend rumors. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.	11	11½	Railway Spr., pref.	105	
Allis-Chalm., pref.	39	40	Republic, com.	37½	39¼
Beth. Steel, com.	31	32	Republic, pref.	101¼	101½
Can, com.	11	11½	Sloss, com.	77	80⅞
Can, pref.	75⅝	76¼	Pipe, com.	23	
Car & Fdry, com.	64	65¼	Pipe, pref.	73¼	75⅛
Car & Fdry, pref.	117	117⅝	U. S. Steel, com.	85¼	88⅝
Steel Foundries	61	65¼	U. S. Steel, pref.	120¾	122½
Colorado Fuel	40¼	42½	Westinghouse Elec.	66	68¾
General Electric	151½	153½	Va. I., C. & C.	59	
Gr. N. ore cert.	68⅞	71	Am. Ship, com.	78¾	80½
Int. Harv., com.	94	95¾	Am. Ship, pref.	110	
Int. Pump, com.	47	47¾	Chi. Pneu. Tool	43½	45
Int. Pump, pref.	85½	87	Cambria Steel	48	48½
Locomotive, com.	51½	53½	Lake Sup. Corp.	23¾	25
Locomotive, pref.	113		Warwick	11¼	
Pressed St., com.	43½	44¼	Crucible St., com.	14¼	14¾
Railway Spr., com.	43	43½	Crucible St., pref.	86¼	87⅝

Last transactions up to 1 p.m. to-day are reported at the following prices: Allis-Chalmers common 11; preferred 39; United States Steel common 84¼, preferred 120¾, bonds 104½; Car & Foundry common 63¾, preferred 117; Locomotive common 50½, preferred 113; Colorado Fuel 40¼; Pressed Steel common 43, preferred 101⅛; Railway Spring common 42; Republic common 37, preferred 101½; Sloss-Sheffield common 76; Cast Iron Pipe common 23, preferred 75⅛; Can common 10⅞, preferred 75½.

The American Hardware Corporation, New Britain, Conn., has increased its capital stock from $7,500,000 to $12,500,000. Of the increase, $2,500,000 will be distributed to the stockholders as a stock dividend, and the remaining $2,500,000 will be held as treasury stock. The stock dividend will be one share to every three shares now held by the stockholders.

Dividends.—The Wheeling Steel & Iron Company has declared a quarterly dividend of 2 per cent., payable May 2.

The Pennsylvania Steel Company has declared the regular semiannual dividend of 3½ per cent. on the preferred stock, payable May 2.

The Standard Underground Cable Company, Pittsburgh, has declared a quarterly dividend of 3 per cent.

The Pittsburgh Lamp, Brass & Glass Company, Pittsburgh, has declared a quarterly dividend of 1¾ per cent.

The J. G. Brill Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable May 2.

The William Tod Company, Youngstown, Ohio, has received a contract for the new rod mill to be built by the American Steel & Wire Company, near Birmingham, Ala.

Labor Notes.

On April 15 negotiations which had been in progress for some weeks between the bituminous coal operators and miners in the Pittsburgh and Irwin fields were broken off and a strike was formally declared. The operators conceded an advance of 5 cents a ton to 95 cents, but refused to put wages on a run-of-mine basis. The miners asked to be paid for run-of-mine, because they claimed that the new white powder which Government experts and the mining companies insist should be used blows the coal into small pieces, many of which pass through the screens. About 50,000 miners are out.

At Quincy, Mass., President Bowles of the Fore River Shipbuilding Company addressed the employees of the company last week, urging them to sign a remonstrance against the clause in the Naval Appropriation bill providing for the construction of battleships only in yards operating under the eight-hour schedule. The plant at Quincy has a nine-hour day. To shorten it to eight hours, President Bowles said, would make the profitable construction of battleships in private yards impossible.

It is reported that a majority of the men on strike at the Bethlehem Steel Company's works, South Bethlehem, Pa., are in favor of returning to work. One troop of the State constabulary has left South Bethlehem and one troop still remains.

The indications are that the union machinists of Indianapolis, Ind., will not strike, as threatened for several weeks. Most of the employers and workmen have agreed on wages and hours and conditions of work, the increase in pay being 2½ to 5 cents an hour. Three hundred machinists of the Model Gas Engine Works and Otis Elevator Works, Peru, Ind., have returned to work. Their demands were for a 9-hour day, an increase of wages from 33 to 35 cents an hour, and some betterment in working conditions. The Commercial Club of the city interested itself in the situation and helped toward a settlement.

The Alan Wood Iron & Steel Company, Conshohocken, Pa., has advanced the wages of its rolling mill employees equal to about an average of 10 per cent., effective April 11.

The strike at the plant of A. M. Byers & Co., South Side, Pittsburgh, manufacturers of wrought iron pipe, has been satisfactorily settled, the men having been granted an advance in wages. The entire plant is now in full operation and there will be no interruption whatever in filling orders.

It is stated that the Sons of Vulcan, composed of puddlers in bar iron mills in the West, will demand a flat rate this year of $6 a ton for puddling. At present puddlers are paid $5.62½, according to their sliding scale, the basis being the selling price of bar iron. If a demand is made for a straight price of $6 it will probably be opposed by the mills.

Correction.—In the illustrated description of a new French gear cutter for which the Carpenter-Kerlin Gear & Machine Company, 77 White street, New York City, is the American agent, printed on page 862 of *The Iron Age* April 14, 1910, it was erroneously stated that the machine was intended for cutting the teeth of spur gears. The word "spur" should have been "bevel," as the machine is designed for roughing bevel gears.

Correction.—The statement in the last issue of *The Iron Age* that the B Niagara furnace of the Tonawanda Iron & Steel Company, which went out of blast April 9, had been in continuous operation for seven years and eight months was erroneous. The furnace in question was blown in October 6, 1904, making a period of five years and six months of continuous operation.

A New Gary Power Plant.—Construction is under way on a new power house at Gary, Ind., to use blast furnace gas and develop electrical power for the plants of the American Sheet & Tin Plate Company and the American Bridge Company. This new power plant is directly south of the present plant of the Indiana Steel Company and will be housed in a building 105 x 575 ft. There will be 10 engines and generator units in the new plant and each engine will be of a larger size than the engines in the existing plant. The cylinders in the new units will be 44 x 60 in., instead of 44 x 54 in., and the generators will be of 3000 kw. capacity, compared with 2500 kw. The capacity of the new plant is estimated at 40,000 hp., or 30,000 kw.

The regular monthly meeting of the Associated Foundry Foremen of Philadelphia and vicinity was held in Philadelphia on the evening of April 12. President C. R. Brown occupied the chair. James Connell of the Link-Belt Company, Nicetown, Philadelphia, read a paper on "Self Help," which was followed by an interesting discussion. George W. Moore of the J. W. Paxson Company was elected as a delegate to attend the annual convention of the Foundry Foremen's Association to be held in Detroit.

The Girard Iron Company of Pittsburgh, operating Mattie Furnace at Girard, Ohio, and the United Iron & Steel Company also of Pittsburgh, operating Cherry Valley Furnace at Leetonia, Ohio, and Ella Furnace at West Middlesex, Pa., have joined the Bessemer Pig Iron Association, whose headquarters are at Youngstown, Ohio. This organization now embraces 10 concerns in its membership, operating 15 blast furnaces in the Mahoning and Shenango valleys. J. G. Butler, Jr., Youngstown, is chairman.

The Dominion Motors, Ltd., Windsor, Ont., has purchased a site of 8½ acres at Walkerville, Ont., on which it has erected a building, 60 x 408 ft., and it is the intention of this company to build four more structures of practically the same size within the next 12 months. The company has also decided on the erection of a factory to make gray iron, aluminum and brass castings. Considerable new equipment of a varied character will be required.

The interest of the general public in the appearance of Halley's comet is shown by a very active demand for small telescopes that has sprung up during the past week or two, according to the report of the Warner & Swasey Company, Cleveland, Ohio, which makes an extensive line of "star gazing" apparatus in addition to its turret lathes.

The National Tube Company, Pittsburgh, has been considering in a tentative way the matter of making some large improvements and additions to its Benwood Works at Benwood, W. Va. It is probable that a decision will be reached in the near future.

Announcement is made that the Westinghouse Electric & Mfg. Company will build a very large steel foundry at Trafford City, Pa., where its foundries are now located, but the capacity of which is not large enough to meet the increasing demand.

The Tyrone Iron Company, Harrisburg, Pa., is about to resume the operation of the forge department of its plant at Tyrone Forges, Pa., on orders which will probably keep it busy throughout the year.

THE MACHINERY MARKETS.

There is a good call for general machinery in the New York market, and business in the East was augmented this week by the appearance of a large list from the New York Central Railroad, two smaller railroad lists and inquiries for about $10,000 worth of tools from a large shipbuilding company. In all, the new lists placed before the trade call for expenditures of about $100,000, which makes about $300,000 worth of business in sight in the way of actual lists in the Eastern territory. Chicago is experiencing another quiet period, but general business conditions there are good and the agricultural implement industries are very busy. The Western railroads are still disappointing the trade and the Great Northern Railroad has bought only a little against the large list it now has out. In Milwaukee the market is generally dull and the conditions there are practically reversed from those that existed a few weeks ago, but there are plenty of orders for repair plants and replacements. The automobile demand still continues to overshadow the call from other lines in Detroit. In Pittsburgh inquiries are plentiful enough, although but little actual business is being closed. The trade there is following the electric railroad business closely, as there is some business in sight from that source. Labor conditions are blamed for the general lack of demand in Pittsburgh. A good, steady business is being done in the South, and there is some scattered buying in the far West.

New York.

NEW YORK, April 20, 1910.

The railroads have been liberal buyers during the past week, but not against lists, the orders placed having been for small groups of tools to be distributed at different points. Two new lists came before the trade during the week, one from the New York Central, which will call for at least $50,000 worth of equipment, and a small list from the Pennsylvania Railroad. The New York Central list covers a wide range of machine tools and the equipment it is expected will go to the West Albany shops. These shops are nearly ready to receive the machinery, and as there has been considerable delay in getting the list out it is predicted that orders will follow its issuance closely. The Pennsylvania Railroad has listed some machinery requirements for its Altoona, Pa., shops, and it also has a preliminary list out for a line of machinery to be delivered at the Cape Charles, Va., shop. The latter is only a preliminary list and will be followed by larger inquiries, while the Altoona list is said to be principally for replacement. The Baltimore & Ohio Railroad is still placing scattered orders which are supplementary to the large list which it closed out some time ago, and from the inquiries now before a number of machinery houses it appears that there will be more orders from that direction.

The Fore River Shipbuilding Company, Fore River, Mass., is asking for about $10,000 worth of metal working machinery. This company has been placing orders quite steadily of late and its recent purchases have amounted to fully $30,000, according to estimates made in the trade. There has been a good volume of steady buying from various sources in this market and considerable of it has come from automobile garages. The automobile repair plant business is a growing industry and a number of companies have been formed of late in this vicinity to do repair work only.

The demand from the export trade is also good and South American and Mexican export men have been doing considerable buying. Inquiries for sugar plant machinery are coming in, and the indications are that the buying in this line, which is generally heaviest in the late spring, will be a little better than usual. There seem to be good sugar crop reports and money is decidedly easier in Cuba than it was a year ago. At that time, it will be remembered, a number of sugar plantation and refinery projects were started, but were laid over because of uncertain business conditions.

The Ironclad Mfg. Company, whose plant in Brooklyn, N. Y., was greatly damaged by fire recently, is planning to rebuild as soon as possible. The company, which manufactures an extensive line of hot water heaters, range boilers, milk cans, steel barrels and other sheet steel products, will erect a large reinforced concrete building, but at present its plans as to the machinery equipment, &c., have not been perfected. It is understood that the contract for the building will be given to the parties who can get the work done in the shortest possible time, and consequently the trade will shortly hear of the machinery wants.

The Orson Automobile Company, which was organized by 100 prominent New York capitalists, has purchased the plant of the Bailey Automobile Company, Springfield, Mass., and is now equipping it for manufacturing its new automobile. H. B. Layman and E. C. Kilborn are in charge at Springfield. Arrangements are only being made to manufacture cars for the different members of the company. If these automobiles are a success it is the intention of the company to enter into their manufacture on a large scale.

The Westinghouse Lamp Company, which has a large plant at Watsessing, a suburb of Bloomfield, N. J., is arranging to build two reinforced concrete steel buildings not far from its present plant. One of these structures is to be a machine shop and is to cost about $15,000. The other will be used for warehouse purposes. The contract for the erection of the plant has been awarded to the Snare & Triest Company of New York.

The Board of Estimate of the city of New York has adopted resolutions setting aside $60,000,000 of the city's money which is to be spent on subways, and plans are rapidly being pushed forward for the subway extensions, which have been mentioned in these columns before.

Extensive additions are being made to the plant of the National Roofing Company, manufacturer of asphalt roofing and paint, at Tonawanda, N. Y. The company is spending from $25,000 to $35,000 for construction work, and this will include the erection of a paint shop 50 x 150 ft. and a varnish shop. Electrically operated machinery, including electric hoists, will be installed, together with other machinery requirements.

The plant which the Hedden Iron Construction Company, Newark, N. J., is erecting at West Elizabeth, N. J., on the Lehigh Valley Railroad, for which machinery details are now under way, is to be built of hollow tile and will be 120 x 250 ft. This plant will be used chiefly for fabricating iron and steel, both for the trade and for the company's own use in erecting work.

The National Machinery Mfg. Company, Inc., Rockaway, N. J., has not as yet completed plans for its proposed new shops. The company is now making tools and dies and turning out samples and experimental work. The machinery details will come later.

The Hotel Dennis at Atlantic City, N. J., has been selected as the headquarters for the joint conventions of the American Supply and Machinery Manufacturers' Association and the National Supply and Machinery Dealers' Association on May 11, 12 and 13.

The Pittsburgh Contracting Company, which is building section 53 of the Catskill aqueduct, N. Y., has placed an order with the Ingersoll-Rand Company for an equipment of air compressors and rock drills.

Henry Wray & Son, Inc., Rochester, N. Y., will erect a four-story brick and steel brass foundry and machine shop, 60 x 60 ft., at 193-195 Mill street.

The Albany Embossing Company, Albany, N. Y., is having plans prepared for a four-story factory building which it will erect this spring. The plant will be equipped for electric motor drive.

A set of heavy crushing rolls will be added to the equipment of the Cheever Iron Ore Company, Port Henry, N. Y.

The Ashio Copper Company, Marunouchi, Tokio, Japan, is having a large electric hoist built in this country and will install considerable other American machinery. The mechanical engineer of the company, Kumatoro Nakai, has been making a tour of plants in this country.

An opportunity exists for American manufacturers to supply cast iron mains, gates, valves, hydrants, &c., for water works to be constructed in the city of Bankok, Siam. Information can be obtained through the Siamese Legation at Washington, a fee of $1.25 being required for copy of specifications.

The Beaver Mfg. Company, Buffalo, N. Y., manufacturer of building boards, wall boards and panels, has let contracts for its new plant on the New York Central Railroad and Military road, North Buffalo, consisting of main factory building, 100 x 280 ft.; indurating building, 40 x 40 ft.; generating building, 30 x 40 ft.; power house, 40 x 42 ft.; two warehouses, 70 x 420 ft. and 60 x 250 ft. respectively,

and an administration building, 80 x 80 ft. Special machinery in the line of formers and presses and cutting and trimming machines will be installed in the new plant. Wm. F. MacGlashan, 228 Perry street, is president.

The American Radiator Company is building at its Pierce plant, New York Central Railroad Belt Line and Elmwood avenue, Buffalo, N. Y., a one-story brick machine shop and a one-story brick core shop.

The Spargo Wire Cloth Company, Rome, N. Y., is erecting a large addition to its plant which will double its capacity. Forty additional looms, operated by electric motors, will be installed.

A third story is being added to the building occupied by the Buffalo Knitting Company, at Niagara street and Massachusetts avenue, Buffalo, N. Y., and additional knitting machinery will be installed.

The Buffalo Mfg. Company, Buffalo, N. Y., manufacturer of coffee urns, coolers and other metalware specialties, 444 Niagara street, has purchased the four-story brick factory 191-201 Clinton street, near Michigan avenue, and will move its plant to the new quarters. Some new machinery will be needed.

The Myers Gas Generator Company, Buffalo, N. Y., has been incorporated, with a capital of $3,000,000, to manufacture gas engines, by Chas. H. Myers, Percy L. Marvin and John H. Schumacher. Offices are at 27-28 Builders' Exchange, Buffalo.

The Fry Mfg. Company has been incorporated at Syracuse, N. Y., for the purpose of manufacturing and dealing in machinery, tools and appliances; capital stock, $100,000. The incorporators are S. S. Newton, New York City; S. J. Cox, Cranford, N. J., and A. C. McDonnell, Bay Ridge, N. Y.

C. K. Williams & Co., Easton, Pa., intend making some additions to their paint manufacturing plant some time during the summer.

The Consumers Coal Company, Plainfield, N. J., will erect a large coal handling plant on a site acquired at South Plainfield.

The Pioneer Pearl Button Company has plans under way for a factory to be erected at Elmira, N. Y.

The J. H. Ladew Company, Newark, N. J., is building an addition to its plant and is understood to be in the market for woodworking machinery and other equipment.

The Newark, N. J., plant of the H. W. Johns-Manville Company, 100 William street, New York, has been completed and is now in operation on full time.

Bids will be received on April 26 by the Board of Water Supply of the city of New York, at its offices 295 Broadway, for furnishing four 100-hp. and one 150-hp. boilers.

The Robert Gair Company, manufacturer of paper goods, Brooklyn, N. Y., has let contract to the Turner Construction Company, 11 Broadway, New York, for a 12-story building, 110 x 175 ft., of reinforced concrete construction throughout.

Kraeuter & Co., Inc., 571-579 Eighteenth avenue, Newark, N. J., manufacture drop forgings and not drop forges, as erroneously stated in a recent issue of *The Iron Age*.

Thomas W. Pentecost and Herbert R. Rose, Dunkirk, N. Y., have purchased the Hilton Machine Works, which they will fit up for repairing boilers and machinery. The new company will be known as the Dunkirk Machine & Boiler Company.

Chicago.

CHICAGO, ILL., April 19, 1910.

The Chicago market is going through another of its mysterious quiet periods. There is a fair volume of business going, but not so much as during the last half of March and the first week or 10 days of April. This peculiar intermittent condition of the trade is puzzling to the machinery houses and is difficult to account for. General business conditions in the West are unusually good and the industries which sell to agriculture are unable to keep up with the demand. The unusually early and favorable spring had a good effect on general trade and it may come around to the machine tool business in due time.

The houses which specialize on the highest grade tools are doing better than those which depend on general lines and second-hand business. The highest priced and most improved tools are the easiest to sell as the majority of buyers are looking for efficiency rather than bargain prices. One disappointment in the trade, however, is that the railroads are very slow in buying shop equipment. The dealers say they have not done any business yet on the lists put out by the Northwestern and the Burlington railroads last winter, and the Great Northern has only bought a little on its large list. There are scattering orders from the railroads all the time for one or two tools, but nothing like the business which the machinery people have had reason to expect.

John McMahon, Chicago, is having plans prepared by F. B. Abbott, architect, for a seven-story manufacturing block extending through from West Van Buren street to Boston avenue, east of Halsted street. The building will cost about $150,000.

The Metallic Mfg. Company, Thirty-ninth street and Langley avenue, Chicago, is having plans prepared for a one and two story factory building 100 x 173 ft., to be erected at a cost of $18,000.

The North Shore Fireproof Storage Company, Chicago, is having plans prepared by F. E. Davidson, Monadnock Block, for a five-story fireproof warehouse building to be erected at 4823 Evanston avenue, which will be equipped with safety deposit vaults and will be modern in every particular. Paterson & Davidson, Monadnock Block, Chicago, are the engineers in charge.

The Waterloo Gasoline Engine Company, Waterloo, Iowa, has let a contract for the erection of an addition to its plant to be used for general manufacturing and storage purposes. The building will be constructed of cement blocks and will cost about $15,000.

The City Clerk of Logansport, Ind., advises that no definite action has been taken regarding the granting of a franchise for the installation of a heating plant, but the proposition is still under consideration.

The P. A. Starch Piano Company, Chicago, whose plant was recently destroyed by fire, has rented a building for manufacturing purposes on Robey street and Blue Island avenue, 90 x 225 ft., with a total floor space of 81,000 sq. ft.

The Gary & Interurban Railway, Gary, Ind., is erecting a new car barn 60 x 160 ft. A strip 15 x 80 ft. on the east side of the building will be occupied as a machine shop.

The National Car Coupler Company, Attica, Ind., is erecting two additions to its plant, one of which will be 165 ft. square and the other 35 x 400 ft.

The Havana Electric Company, Havana, Ill., has been granted a 20-year franchise and it is understood will erect a new power plant and install new equipment.

The Illinois Spring Wire Company, Chicago, has been incorporated with capital stock of $50,000, to manufacture springs, wire and steel products. The incorporators are F. C. Mueller, B. Barragan and F. Dickinson.

W. G. Mercer, Burlington, Iowa, is having plans prepared and will receive bids in a short time for the erection of a wheel manufacturing plant which he hopes to have in operation by September 15.

The Chicago & Northwestern Railway has begun work on the erection of a new roundhouse and machine shop at Nelson, Ill., which will cost about $65,000. The machine shop will be 65 x 95 ft., and will be equipped with power machinery for repair work.

The city of Kennett, Mo., has voted a bond issue of $40,000 for the construction of a water works system.

The Long Mfg. Company, Chicago, whose production of radiators and other automobile specialties is inadequate at present to meet the demands of the business, has had plans prepared by a firm of Detroit architects for a new factory building of considerable size. The details of equipment are yet to be determined upon.

The Galesburg Railway & Light Company, Galesburg, Ill., which now has in service electric generating units of about 1800 kw. capacity, will considerably extend its power system during the present year.

F. D. Brockhouse, Bluffs, Ill., has organized the Electric Light, Power & Heating Company, to install boilers, generating units, &c., and establish a public service plant.

Abel R. Gourley, who has a large trade in implements at Cornell, Ill., is organizing the Cornell Electric Light & Power Company to establish a public service plant. Generating machinery will be needed.

Owing to the complete electrification of its plant at McCook, Ill., the United States Crushed Stone Company, Chicago, is disposing of a large quantity of steam driven machinery which was newly installed two years ago, finding that economy dictates entire dependence upon motors for operating everything in and about the works.

The Indian Refining Company, which has a plant at Georgetown, Ky., for treating Fuller's earth, will complete one this spring at Lawrenceville, Ill. Among the equipment installed will be a 50-ft. rotary dryer, similar to those used in cement plants, and a large rotary cooler.

The Cushion Heel Shoe Company, recently organized at Fort Wayne, Ind., with $200,000 capital stock, has leased the Bash block, five stories and basement, which will be converted into a factory. Judge O. N. Heaton is president of the company. It is reported that a Massachusetts shoe manufacturer, making 1000 pairs daily, will move his plant to Fort Wayne to unite with the new company.

The Steubenville Brick & Tile Company has been organized at Steubenville, Ind., and incorporated with $10,000 capital stock, to manufacture brick and tile. The directors are C. C. Klink, Robert Lacey, Alvin Godwin and John and William Crampton.

The commissioners of Gibson County, meeting at Princeton, Ind., will receive bids until May 4 for 11 steel bridges and 14 reinforced concrete bridges. W. T. Roberts is County Auditor.

The plant of the Logansport Artificial Ice & Cold Storage Company, Logansport, Ind., was totally destroyed by fire April 16. Loss, $15,000.

The Brownstown Water & Light Company has been incorporated at Brownstown, Ind., with $50,000 capital stock,

to supply water, heat, light and power. The directors are Harley Jackson, D. B. Vance and George S. Gray.

The Norton Company and Norton Grinding Company will remove their Chicago store about May 1 to 11 North Jefferson street. They are moving into a new building, the ground floor of which has been designed to meet their peculiar requirements. It will permit the carrying of a larger stock of grinding wheels and grinding machines, and the two companies will then be in a position to give better all round service to their customers.

J. A. Quinlan and M. J. Hanley, Muncie, Ind., are receiving bids for the erection of three buildings—160 x 300 ft., two stories; 50 x 100 ft., one story, and 40 x 60 ft., one story—which will be used for the manufacture of boilers.

Philadelphia.

PHILADELPHIA, PA., April 19, 1910.

In the machine tool trade a fair volume of miscellaneous orders has been received by merchants, the tools sold representing an average range of the general list. The builders report no particular increase in the demand, but state that business is on a fairly even basis. Taken all round, it may be considered comparatively good, with a satisfactory volume under negotiation and in sight. The local locomotive builder has taken some excellent orders recently, which were supplemented last week by one for 80 engines from the Pennsylvania Railroad. Both merchants and manufacturers report scattered orders from the various railroads, although no extensive lists are under consideration in this territory. Reports of plant expansions under contemplation in this vicinity are received with interest by the trade, which, while they may not be productive of immediate business, indicate active buying later on.

Nothing of importance has developed in the export trade; in some lines of specialties it has been a shade more quiet. Reports of deliveries, largely on equipment of a special nature, are reported by several manufacturers.

A moderate demand for second hand machine tools is reported; inquiries and sales have not been confined to any one line, but cover the general run of wood and metal working tools as well as machinery and electrical appliances.

In the foundry trade the recent demand for an increase in wages is being handled individually by the various employers. In some instances a slight advance will be granted by the foundrymen, but at this time it is too early to know whether or not the terms will be satisfactory to the employees.

The Light Mfg. Company, Pottstown, Pa., intends making extensive improvements to its plant. A new location is under consideration, but definite information regarding the company's plans is not yet available.

The Quaker City Laundry Company has purchased property 82 x 110 ft., at the northwest corner of Fifty-eighth and Ludlow streets, on which it proposes to erect a new laundry building.

The Chambers Brothers Company has awarded the contract for the addition to its plant to William A. Dougherty, builder, 1610 Sansom street. The building will be three stories, 76 x 88 ft.; the estimated cost is $45,000.

The Pennsylvania Railroad Company will erect additions 20 x 40 and 40 x 42 ft., to its compressor house at Thirtieth and Race streets. The estimated cost is $10,000.

The Eynon-Evans Mfg. Company has additions to its plant in contemplation which will double the capacity of its foundry, pattern and machine shops. Plans for the extensions to the various buildings are now being drawn by B. F. Stevens, architect, Bulletin Building, this city.

Shalcross & Christian have purchased a piece of ground, 100 x 343 ft., on Tacony street above Orthodox street, Frankford, on which they are considering the erection of an ice making plant. Nothing of a definite nature, however, has been decided upon.

The Chadwick Engineering Works, Pottstown, Pa., builder of the Chadwick motor cars, intends erecting a new plant, its present one being insufficient to meet the increasing demand for its product. The location for the new plant has not yet been decided upon.

It is stated the Girard Estate has decided to erect a coal storage plant at Twentieth and Oregon avenue, with a capacity of 5000 tons. This plant will be utilized for the storage of coal for use in connection with its heating, lighting and hot water systems, operated in connection with its many dwelling houses, &c., in that vicinity.

The Reading Standard Company, Reading, Pa., has acquired 15,000 sq. ft. of floor space in the old Franklin street shops of the Philadelphia & Reading Railway Company, in Reading, which will be devoted to the manufacture of motors and motor parts. The addition has been equipped with the necessary machinery and is now in operation, although further extensions to the equipment are in contemplation. This company now has 90,000 sq. ft. of floor space devoted to the manufacture of bicycles and motor cycles.

The Hess Machine Works reports the domestic demand for fire making machinery as improving, while the foreign inquiry remains quiet. This concern has five sets of file making machines building for a Western customer, and two for an Eastern customer. Three sets have recently been shipped to Russia and two sets to Sweden. The general demand for special machinery is reported active and the plant is fairly busy in all departments.

Financial arrangements, it is stated, have been consumated by which the Susquehanna Railway, Light & Power Company, Wilkes-Barre, Pa., has taken over the Wilkes-Barre Power & Electric Light Company, Wilkes-Barre, Pa., several subsidiary companies operating plants in suburban towns, and the Wilkes-Barre Heat, Light & Power Company, of the same city. It is reported that the new company contemplates making considerable improvements to some of the plants.

The Wilbraham Green Blower Company, Pottstown, Pa., is furnshing the American Coke & Gas Construction Company, Camden, N. J., a large amount of equipment, aggregating 50 carloads, for a by-product coke plant being erected for the Dominion Iron & Steel Company, Cape Breton, Nova Scotia. The equipment includes tar scrubbers, ammonia stills, gas exhausters, coke quenchers, &c. It is also furnishing the Public Service Corporation, Camden, N. J., a positive pressure exhauster, direct connected, with a 10 x 15 in. horizontal Erie engine. Two exhausters are being furnished the Standard Oil Company for Cleveland, Ohio, delivery, while a belt driven positive pressure blower is being shipped for export to Victor Ek., Hango, Finland.

The Sunbury & Selinsgrove Electric Street Railway Company, Sunbury, Pa., will complete a power plant this spring in which engine-driven generating units are to be installed.

The city of Allentown, Pa., whose requirements were recently mentioned, has ordered a boiler of 150 hp. from the E. Keeler Company, Williamsport, Pa.

Upon completion of a new building, work upon which is about to be started, the old car house of the Conestoga Traction Company, Lancaster, Pa., will be fitted up as a machine and forge shop for repair work.

The Standard Cast Iron Pipe & Foundry Company, Bristol, Pa., has received the contract for a large number of special castings to be used in connection with the new pumping station at Reading, Pa.

The Dexter Portland Cement Company, Nazareth, Pa., is improving and extending somewhat its system of electric drive.

New England.

BOSTON, MASS., April 19, 1910.

The market for standard types of machine tools has fallen off in a noticeable degree, dealers and manufacturers being nearly unanimous in the experience. The builders of machines which are used largely in the automobile factories are not affected, but practically everything else is included in the list of tools for which the demand has slackened. Few believe that the condition will continue, there being strong confidence in the May market, which usually is the top-notcher of the year. Sales of the last fortnight consist mostly of rather large business which has been pending for some time. Sales of individual tools are less common. Announcements of increases of manufacturing plants using machinery continue without abatement, indicating that later some very good lists will be out. A strong tendency is shown by buyers to hold off on their purchases, a fact which the New England dealers resent the more because they see the Middle West consuming in a very much larger way, depleting the market in such a manner that when the local trade shall become active deliveries will not be advantageous.

The Gurney Heater Mfg. Company, Boston, Mass., manufacturer of heaters and radiators, has acquired 22 acres of land on Arlington street extension, South Framingham, Mass., and will erect large works on the site. The plans for the new buildings have not been completed, but it is stated that some $250,000 will be expended in providing a plant equipped for manufacturing the company's product on a large scale, with all modern labor saving appliances. The company's works are now located in East Boston, on a site which permits of no extension. They are crowded to their utmost capacity, in fact, have been for several years, and the necessity of larger machine shops and foundry has come to be imperative. The main office is at Franklin and Pearl streets, Boston.

The Bridgeport Forge Company, Bridgeport, Conn., has let the contract for its new plant, which will replace that destroyed by fire several months ago. There will be two one-story buildings, one of steel throughout, 57 x 146 ft., the other of brick and steel, 57 x 160 ft. The works will be fitted with the most modern equipment, and will constitute one of the most important plants in this section of the country for the manufacture of wrought iron and steel forg-

ings, forged rough, dressed or finished. Charles F. Bliss is the president of the company, C. S. Lindsay secretary and treasurer, and Thomas Dunlap sales manager.

The Columbia Motor Car Company, Hartford, Conn., is making large additions to its manufacturing facilities, including the purchase of a large number of machine tools, and will set 2500 gasoline cars as its product for the 1911 market.

According to a published statement the United Shoe Machinery Company, Beverly, Mass., is to erect a four-story extension of its shops, 200 ft. long, of reinforced concrete, following out the scheme of the entire great plant.

Charles Dorf Mix, Boston, Mass., agent for the Alleghany Steel Company's Reliance charcoal iron and steel boiler tubes and for Chandler & Floyd, announces that he has moved from 8 Oliver street to offices at 88 Broad street.

The New Haven Electric Company division of the United Illuminating Company, New Haven, Conn., will erect a two-story brick addition to its Grand avenue power station, 57 x 65 ft., in which will be installed a 1000-hp. Parsons steam turbine, with generator, and a 300-hp. Babcock & Wilcox boiler. In the George street station a 750-hp. Ball reciprocating engine direct connected to two 250-kw. direct current generators will be added.

The Middletown Electric Light Company, Middletown, Conn., will build an addition to its power station, 60 x 70 ft., in which will be installed an engine and steam turbine.

The Lynn Gas & Electric Company, Lynn, Mass., and the Marblehead Gas & Electric Company, in the neighboring town of Marblehead, have petitioned the Massachusetts Gas and Electric Light Commission for the right to consolidate, a project which, if carried out, would mean that Marblehead would be supplied with electric current, probably from Lynn, which is presumed to mean the eventual enlargement of generating capacity.

The Connecticut River Power Company, which has a large plant at Vernon, Vt., is said to have ambitious plans for increasing its capacity, in addition to those recently announced, of developing a large power at Turners Falls, Mass. The statement is made on what seems to be reliable authority that the company will build a large auxiliary steam plant, for use in time of scarcity of water. The unit will not be as large as would be the case had not the company arrangements with customers by which they are to supply their own power when it is otherwise unavailable. The latest extension of the power system is a proposed line to Lowell, Mass., passing through the towns of Lancaster, Shirley, Ayer, Gorge Village and North Chelmsford.

Another important improvement planned by the New York, New Haven & Hartford Railroad is the double tracking of the electric line of the Warren & Bristol Branch between Warren, R. I., and Fall River, Mass., and the doubling of the power station of the division, which is an electrified steam line.

Proposed additions to general manufacturing works in New England include the following: Androscoggin Pulp Company, additions to works at South Windham, Maine; Hartford Faience Company, Hartford, Conn., addition 40 x 65 ft., two stories; Lancaster Mills Corporation, Clinton, Mass., textiles, new mill 120 x 400 ft., five stories, and 50 or more four-tenement houses for employees; Portland Creamery Company, Portland, Maine, large creamery building; Gerald Cooper, 235 Charles street, Providence, R. I., mercerizing mill, 52 x 100 ft., two stories; Bryant Electric Company, Bridgeport, Conn., large storehouse and new chimney, the improvements including the installation of a 400-hp. Babcock & Wilcox boiler; I. Newman & Son, New Haven, Conn., corsets, addition to boiler house.

The Waltham Machine Works, Waltham, Mass., has brought out an improved type of its watch and clock pinion cutter. An important improvement is the magazine feed attachment by which production is increased materially. The main shaft is stopped while the feeding operations are performed, instead of accomplishing the feeding during the time of the return of the slide after the last cut. The result is that a much quicker return of the work slide is obtained.

The Bay State Grinder Company, Worcester, Mass., has been organized to build a new piston ring grinder and a cam and valve face grinder, with shop at 186 Union street.

The business of the John A. White Company, Dover, N. H., has been incorporated under Maine laws, with capital stock of $50,000. Joel F. Sheppard is the president and Stanley C. Whipple treasurer. The business was established 35 years ago to build high class woodworking machinery. The new officers propose to pursue an aggressive policy, and develop the business to larger proportions. Mr. Sheppard is a mechanical engineer and graduate of Cornell University.

The Light, Heat & Power Corporation, Leominster, Mass., will add to its plant a steam turbine, horizontal type, and alternating current generator of 500 kw. capacity, or more, with complete auxiliary equipment for a unit to operate condensing.

The H. B. Smith Company, Westfield, Mass., manufacturer of heaters and radiators, has begun an extensive scheme of improvement of its works. The foundry at the North End plant is being extended by the erection of a building 48 x 80 ft., and a concrete core room is building at the South Side plant. The programme of rearrangement and extension will be carried out chiefly at the North End, and will include eventually a very large increase in producing capacity.

Pratt, Read & Co., Deep River, Conn., manufacturers of piano keys, &c., have acquired control of the business of Wasle & Co., New York, manufacturer of piano and player actions and will concentrate the business at Deep River.

The Bridgeport Metal Treating Company, Bridgeport, Conn., has purchased the steel hardening business of the A. G. Barrow Company of that city, and will put in a high speed steel equipment, lead furnaces, lead, cyanide and barium chloride baths and pyrometers for testing temperatures, doubling the capacity of the plant. A specialty will be made of hardening high speed steels, as well as case-hardening, heat treating, annealing and tool steel hardening. W. T. Gibson, the manager of the new company, was with its predecessor, and has had long experience in this class of work.

Tubular boilers will be required for the city pumping station at Rockport, Mass.

A machine shop for repair work is being installed by the Shore Line Electric Railway, New Haven, Conn., in its new car house.

At Lawrence, Mass., the purchase of new pumping engines is under consideration.

Ballou & McColley, Winchendon, Mass., will erect an additional factory building, 40 x 120 ft., two stories, equipped with power and woodworking machinery, exhaust, blowers, sprinkler system, &c.

Cincinnati.

CINCINNATI, OHIO, April 19, 1910.

There is no uniformity in the sales department records here. Some tool manufacturers have full order books and the output of their plants engaged ahead on orders received early in the year; others are not so well filled up and are keen after any business offering. Business is coming in spots; one large local manufacturer of lathes has forces engaged on advance bookings, but little new business in sight; another has within the past few days received the first orders of the month, and of these, several are for export. Taken as a whole, however, the foreign market is very quiet.

The machinery and equipment department of the Cincinnati Iron & Steel Company reports business increasing daily. Included among orders of the week were a special multiple punch for the American Angle Steel Post Company, Enid, Okla.; an 8 x 14 lathe for the Eagle Mfg. Company, Cincinnati; a large concrete mixer for the Evans Rendigs Company, Cincinnati; a 15-in. double I-beam Cisco crane for the Allen Engineering Company, Memphis, Tenn. The company also states there is an increasing demand for small tools, such as bending rolls, floor cranes, drills and hand power punches, shears, &c. An order was received from one concern for 250 Nugent clutches. The company's new Cisco 14-in. lathe is meeting with such favor that arrangements will be made for increasing the capacity providing for a larger output.

It is expected that some additional machinery will be needed for the enlarged Schacht Mfg. Company, manufacturer of motor vehicles, now located at 2727 Spring Grove avenue, Cincinnati. Articles of incorporation have just been filed whereby the company's name is changed to the Schacht Motor Car Company, with a capital of $500,000. The company had an offer of land and a good sized bonus to locate in Sandusky, Ohio, but rejected it. It is now seeking a site upon which to build a new factory. The proposed plant will be of concrete, brick and steel construction, three to four stories, and will cost about $100,000. G. A. Schacht is president, William Schacht, vice-president, J. F. Dietz, treasurer, Charles W. Figner, secretary, and these, with Arthur Crawley, constitute the directors.

The Whittaker-Glessner Company, Wheeling, W. Va., has acquired land valued at about $2,000,000, and it is reported from that city that the work of building a large steel plant will begin this summer.

The Lodge & Shipley Machine Tool Company, Cincinnati, is working full time in all departments and report business as satisfactory. The latest improvemeht in the large plant in Camp Washington is the enlargement of the draughting department which is being doubled in capacity.

The Cincinnati Electrical Tool Company is enjoying an extraordinary run of spring business and reports being sold up to capacity two months ahead. During the past 12 months this company, which was some time ago reorganized, has trebled its line of electrical tool specialties and has made a number of important improvements.

The Gray Planer Company has its forces busy on orders, which illustrates the spotty character of the machine tool

market for April. While for several weeks the small and medium sized planers have been in demand with other manufacturers, the larger, heavier and most expensive types have been sold by this company. Some specially constructed heavy planers for use in large manufacturing plants of the Central States' districts have just been shipped.

The Cincinnati Planer Company is now installed in its new home at Oakley. The officials of this company, who have been engaged for a month or more in moving from the Buck street plant, are congratulating themselves over the successful handling of a normally large business, notwithstanding the natural confusion resulting from the transfer of the plant. The Acme Tool Company, a late organization, will occupy the entire building in Buck street, from which the Planer Company has just removed.

The Schellenback & Hunt Tool Company is busy with its small tool specialties, including reamers, and reports its chief difficulty to be in getting competent help. This is a common complaint among members of the Cincinnati tool manufacturers at this time. Many machinists who were laid off during the depression either went with the automobile manufacturing plants, or become chauffeurs, both of which vocations pay more than the machinist at the shop bench has been accustomed to getting.

The Enterprise Foundry & Fence Company, Indianapolis, Ind., has built a new foundry department and is now equipping it.

Hethrington & Berner, Indianapolis, Ind., have made some important additions to their plant and report the outlook exceedingly promising.

An important addition to the plant of the American Sheet & Tin Plate Company at new Philadelphia, has been decided on and some additional equipment will be installed, including four large resquaring shears, one large hydraulic stretcher, one double annealing furnace, an oil machine for oiling sheets, a 50-ton electric crane, additional pickling facilities, a physical testing machine, additional loading platform trucks, &c. The addition to the mill will be 126 x 192 ft., which will make the main factory over 1100 ft. long. The building for the cold roll engine will be 24 x 28 ft., and there will be an additional warehouse 64 x 110 ft. The addition decided on is the second one within three years.

The factory of the National Automatic Tool Company in Beallview, Richmond, Ind., will not be opened as early as originally intended because of some faulty concrete construction. It is expected that the opening ceremonies will be held about June 10.

Cleveland.

CLEVELAND, OHIO, April 19, 1910.

Local machinery houses received a good volume of small orders during the week, but as they were nearly all for single tools the aggregate business placed was hardly satisfactory. Orders are pretty well scattered among various industries, but there is more of a demand at present from small machine and repair shops than from other sources. The call is naturally for small and medium sized tools. A number of tools have recently been sold to equip repair shops in connection with garages, but this trade now seems to have been pretty well supplied for this season.

Reports from the machine tool manufacturers continue encouraging. The inquiry for automatic screw machinery is good and orders have been more numerous during the past week or two, with deliveries about as far off as ever. The bulk of this business is coming from the automobile trade. Turret lathes are also popular sellers. The foreign trade is still light, having shown no material change during the past few weeks. Inquiries for heavy handling and special machinery are holding up well, and with the work already on hand manufacturers of this class of machinery expect to have a very satisfactory year. Very little business in machine tool lines is coming from the railroads.

Some manufacturers in metal working lines are not so crowded with work as they have been during the past few months, but they have plenty to keep their plants running at full capacity and the general feeling continues optimistic. Expecting prosperous times to continue, four Cleveland manufacturers are about to place contracts for the erection during the next few months of new plants that will largely increase their present capacities. These companies are the Atlas Car & Mfg. Company, the Atlas Bolt & Screw Company, the D. Connelly Boiler Company and the Reliance Electric & Engineering Company. The proposed plants of these companies will be located in a new tract that will be opened for manufacturing purposes in East Cleveland by the building of a spur railroad track from the Nickel Plate Railroad.

The Warner & Swasey Company, Cleveland, will soon begin the erection of a large addition to its plant, about 50 x 200 ft., four stories. The erection of this extension will be the carrying out of plans for a large main building that were laid out when the present main factory building was built. An old section of the plant will be torn down and replaced with a handsome brick structure that will conform with and be an extension to the present main building.

Plans have been completed for the new plant of the D. Connelly Boiler Company which will be built adjoining the Nickel Plate tracks on East Collamer street, in East Cleveland, and contracts will be let and work started shortly. The main building will be a shop for boiler, tank and other plate work, 140 x 190 ft. There will be a 60-ft. center span and two 40-ft. side spans. The center span will be equipped with a 30-ton electric crane and each side span with a 10-ton crane. In addition, there will be a power house and forge shop, 50 x 200 ft. An engine and generator will be required, but the capacity of the power plant has not yet been decided upon. Plans for the plant have been prepared by John W. Seaver, engineer, Cleveland.

The Reliance Electric & Engineering Company, Cleveland, builder of motors, has purchased a site on East Collamer street, East Cleveland, on which it will begin the erection of a new plant about June 1. This company has outgrown the capacity of its present quarters in the Caxton Building and will build a plant giving it fully double the amount of its present floor space. Plans are being prepared by Dodge & Day, engineers, Philadelphia, Pa.

It is announced that the Great Lakes Engineering Works of Detroit, Mich., will shortly receive bids for the construction of its new shipbuilding plant in Ashtabula, Ohio, for which a site was secured several months ago. It is expected that a large amount of machinery equipment will be required.

The Ideal Filter & Mfg. Company and the Peerless Ice Machine Company, who occupy adjoining plants in Collinwood, a Cleveland suburb, have consolidated under the name of the Ideal Peerless Mfg. Company. The new company will manufacture ice making machinery, filters, pumps, washers, keg scrubbers, carbonators, liquid coolers, &c.

An expenditure of about $300,000 is planned in the erection of a clay sewer pipe plant in Newburg, a Cleveland suburb, on a site recently secured by H. A. Robinson of Akron, Ohio. Plans have been prepared by the F.-P. Construction Company, Cleveland, which has the contract for the construction work. There will be six buildings of reinforced concrete, the largest of which will be 100 x 500 ft., six stories. The others will be one-story buildings.

The Burke Golf Shaft Company, Newark, Ohio, has been incorporated, with a capital stock of $25,000, by William Burke, who will be manager of the company, and several others, for the manufacture of golf shafts and whip stocks. The erection of a factory building has been started.

The Rubber Products Company, Barberton, Ohio, is planning the erection of an addition to its plant, 40 x 60 ft., to be used as a pressroom. Accommodations will be provided for 20 presses.

The White Sewing Machine Company, Cleveland, which is building a large new plant, has sold its present plant on Canal road to the Ohio Sash & Door Company for a warehouse. An addition will be erected for manufacturing purposes.

H. O. Peck, the president, and others interested in the H. O. Peck Automobile Wheel Company, 181 East Water street, Portland, Ore, have been looking over the local field the past few days with the view of establishing a plant in this city, or in Detroit, for the manufacture of spring wheels for automobiles.

The Victor Iron Works Company, Cleveland, which was recently formed to manufacture various lines of special machinery, has been incorporated with a capital stock of 50,000. The company has an office in the Schofield Building.

Pittsburgh.

PITTSBURGH, PA., April 19, 1910.

Manufacturers and dealers of this district have been called upon, thus far this month, to estimate on enough work to keep the shops busy for a long period, if it were all secured; but inquiries relate largely to additions or new plants that are only contemplated. A fair percentage of business has, however, been closed lately on very favorable terms and market conditions are generally considered satisfactory.

In spite of disturbed conditions at the mines, particularly those of the Pittsburgh and Illinois districts, more orders for new equipment have been placed by operators within the past few weeks than for quite a while previous. Among the manufacturers and dealers of this State, as well as Ohio, who make a specialty of the trade, the Phillips Mine & Supply Company and Pittsburgh Rail Supply Company, Pittsburgh; Link Belt Company, Philadelphia; Boyts, Potter & Co., Connellsville; Hockensmith Wheel & Mine Car Company, Penn. Station; J. C. Stine, Tyrone; Central Track Supply Company, Springfield, Ohio, and Jeffrey Mfg. Company, Columbus, Ohio, are all reported to be doing a good business with collieries; while concerns furnishing power sets, motors, controllers, &c., such as the Westinghouse Electric & Mfg. Company, are also taking full advantage of the present opportunity.

The electric railroad promoter is again abroad in the land, and here in Pittsburgh he is usually heard from early in the game, as figures on equipment from responsible machinery builders and supply houses are always an impressive adjunct of a prospectus. In the majority of cases these schemes come to nothing; but this year a considerable proportion of them are reaching the grading stage and it pays manufacturers to treat organizers of new traction lines with every possible consideration. As a barometer of the country's present financial condition, the activity in electric or gasoline motor railroad building now manifested is noteworthy; for instead of trying to float construction bonds anywhere at any price, as was formerly done, the necessary funds have of late been mainly furnished by people having other interests in the same localities, the value of whose property will be enhanced by better facilities of transportation. Within the next few months a great deal of track and line material, power house machinery, substation apparatus and rolling stock will be purchased in this district, which has the largest trade in equipment of that class of any market in the world.

The Coshocton Light & Heating Company, Coshocton, Ohio, whose need of increased capacity was mentioned last winter, has let contracts for a hydroelectric generating plant of 1500-hp., with accessory equipment. This is in addition to a steam turbine and generator of 750-hp. recently installed, giving the plant a present output of over 4000-hp.

The Marion Steam Shovel Company, Marion, Ohio, has received contract for a dredge 100 ft. long, 58 ft. wide and 13 ft. deep, to be installed by the Conrey Placer Mining Company, Virginia City, Mont., for its operations in Madison County of that State. The bucket chain will hold 80 buckets, each of 15 cu. ft., giving the dredge a capacity of about 300,000 cu. yd. per month. A power plant of 750 kw. will be required for operating, individual motor drive being used.

The Alleson Coal Mining Company, Sullivan, Ind., will install an electric plant and motors, for lighting and operating its properties by electricity.

A modern, high duty pumping engine will probably be added this year to the water works at Alliance, Ohio.

A vertical shaft centrifugal pump capable of handling 6,000,000 gal. in 24 hours, will be installed this season at Wellston, Ohio, by the Jackson Coal & Mining Company, Jackson, Ohio.

The Citizens' Light, Heat & Power Company, Johnstown, Pa., which has four steam turbine generating units of the Parsons type installed in its power house, will be compelled by the increase of commercial motor load to provide for greater capacity. A large expenditure for improvements is reported to have been decided upon.

Electric motors for operating machinery in and about the company's collieries will be installed in considerable number this season by the New River & Pocahontas Consolidated Coal Company, Berwind, W. Va.

The Pittsburgh Filter Mfg. Company, Pittsburgh, has started work on the large mechanical filtration plant for the city of Rock Island, Ill.

A report from Frederick, Md., states that the Frederick Railroad Company is planning the erection of repair shops for maintenance work in connection with the several steam and electric lines which are now part of its system.

The Wm. Todd Company, Youngstown, Ohio, is reported to be figuring on horizontal blowing engines for the Woodstock furnaces at Anniston, Ala.

Electrically operated pumps may be required next fall at Dayton, Ohio, in connection with water works extensions now under consideration.

Local firms will probably be called upon to submit estimates shortly for machinery to be installed in a municipal power and lighting plant at Beaver Falls, Pa., where the matter of authorizing construction is now under consideration.

A machine shop about 50 x 200 ft. is contemplated as an addition to the plant of the McCaskey Register Company, Alliance, Ohio. Increased warehouse facilities may also be provided.

It is reliably reported that the American Steel & Wire Company has given an order for two gas-driven blowing engines to be installed at the Central furnaces. They will have cylinders 44 in. in diameter, with 60-in. stroke, and Slick blowing tubs of 80-in. diameter. These machines will operate on gas from the blast furnaces and are to supply air at about 18 lb. pressure. Other machines in service at the same plant are mainly of the steam driven steeple compound or long crosshead types.

It is reported from Belmont, Pa. (Somerset P. O.), that the Belmont-Quemahoning Coal Company has recently been organized by Wilbur A. Marshall and others who are interested in a number of similar operations. It is stated that development work is already in progress and that the equipment now in service will need to be considerably enlarged a little later on. The address of the company is not definitely given, but it can probably be reached at Somerset.

The power house of the Kittanning Electric Light Company and the Kittanning & Leechburg Street Railways Company, Kittanning, Pa., was destroyed by fire April 14. The estimated loss is $200,000.

The Girard plant of the A. M. Byers Iron Company, Youngstown, Ohio, recently suffered a $100,000 fire loss. The boiler house, machine shop and blacksmith shop were totally destroyed.

The Columbiana Pump Company, Columbiana, Ohio, manufacturer of single and double action hand pumps, will soon double its capacity by an addition, 50 x 200 ft., L shaped, of brick and mill construction. The first floor will be used as an addition to the machine shop and the second floor as a paint and stock department. Work will be started at once and some additional machine tools will be required later on, the exact tools having not yet been decided on. The new addition will be ready for operations about September 1. The present cupola is large enough to care for the new machine shop and no increase will be made in this department at present.

The Bessemer Gas Engine Company, Grove City, Pa., with branch offices in the Bessemer Building, Pittsburgh, is making some large additions to its shops, and is buying considerable new machinery and equipment. Recent sales by this company have been large, going to a wide range of territory.

Detroit.

DETROIT, MICH., April 19, 1910.

The automobile trade still overshadows all other lines of machinery selling to such an extent that it is difficult to avoid reiteration of past weeks' reports. Wherever one goes among the shops and supply houses of this section, not only in Detroit and Toledo, but also in other cities of Michigan, Ohio and Indiana, all minds seem to be obsessed by the one idea of making the most of that trade while it lasts. The writer believes, however, that the motor car industry is established upon the basis of a rapidly growing demand, and its requirements in the way of equipment are only just beginning to be met. Autotruck building alone is attaining enormous proportions.

Nevertheless, there are many other classes of trade which must not be overlooked. Take, for example, the related lines of agricultural machines and implements, tractors for road work, ditching, &c., gasoline engine driven hoists, isolated lighting sets, contractors' outfits and the like. Manufacturers in these several lines are all pushing their works to the utmost of present capacities, and plans for extensions are reported daily. Buying from such sources does not appear to be on such a generous scale as that of the automobile and motor truck builders, for the reason that it is done gradually and in small lots at a time; but one of the most representative dealers here states that the totals for a period of, say, three months are far greater. This, too, is without considering the general industrial field.

The Kelsey-Herbert Wheel Company, Detroit, is adding to its electrical equipment.

Plans of the Swift Automobile Company, Detroit, for erecting a motor car factory at Oklahoma City, Okla., are reported to be rapidly coming to a head. The dimensions of the plant contemplated are given as 60 x 600 ft., two stories.

Low lift pumps of large capacity, steam or motor driven, have been recommended for installation at Saginaw, Mich., and the matter will probably be decided this spring or early in the summer. A large line of equipment is involved.

The Timken-Detroit Axle Company, Detroit, is having plans drawn for a new plant for the manufacture of axles, roller bearings, &c. It will include buildings 45 x 200, 63 x 158, 62 x 70 and 70 x 70 ft., varying in hight from one to four stories, for which a large list of new tools will be required.

A new power plant with additional boilers, engine and electrical machinery is reported to have been decided upon by the Munising Paper Company, Ltd., Munising, Mich., which will erect a brick structure for housing the machinery required.

The Seager Engine Works, Lansing, Mich., is placing a large number of Olds engines with contractors and others engaged in construction work. Owing to the favorable weather conditions, orders entered lately have had to be taken for rush delivery in almost every instance.

The Laidlaw-Dunn-Gordon Company will install a pumping engine of 7,000,000 gal. daily capacity, sold through its Detroit office, in the municipal water supply station at Flint, Mich.

A large line of alternating current motors with which to provide for electric drive of machinery will be added to the planing mill equipment of the Kramer Bros. Company, Frankfort, Ind.

The extensions under way this spring at the plant of the Continental Motor Mfg. Company, Muskegon, Mich., include a machine shop addition 135 x 160 ft. This company makes gasoline engines for marine work as well as automobile motors.

The city of Hancock, Mich., is preparing to put in service

this summer a new motor driven Goulds pump recently purchased.

It is probable that the enlarged shop facilities recently decided upon by the Overland Automobile Company, Toledo, Ohio, will be still further extended, necessitating the purchase of considerable more equipment.

A Corliss engine of 500 hp., Wickes boilers and dry kiln, with apparatus manufactured by the American Blower Company, Detroit, are being installed by the Escanaba Lumber Company, Escanaba, Mich., at its new Masonville flooring factory.

The addition to be made to the Reliance Motor Truck Company's plant at Owosso, Mich., will comprise a building 60 x 750 ft.

In stating the size of the steam turbine unit to be installed by the Toledo Railways & Light Company, Toledo, Ohio, a cipher was dropped. The machine required is of 5000 kw., with large overload capacity.

The Commonwealth Power Company, Kalamazoo, Mich., has begun work on the construction of a large steam plant. Plans and specifications for the improvements to be made are not completed as yet, but the power building will be about 125 x 250 ft. Other buildings for repairing the equipment of the company and necessary shop work will also be erected.

The Church-Wilcox Company, Saginaw, Mich., subsidiary of the General Motors Company, is having plans prepared for the erection of new buildings which will practically double the capacity of its plant.

The Grand Rapids Hardware Company, Grand Rapids, Mich., will erect a new factory building 133 x 235 ft., one story.

The Trio Mfg. Company, Detroit, Mich., is erecting an addition to its plant 50 x 115 ft. for the manufacture of automobile parts.

J. Lawson Miller, architect, 15 Goebel Building, Detroit, is receiving bids for the erection of a building 42 x 175 ft., two stories, to be used for the manufacture of automobile parts.

The Woelkner & Harry Mfg. Company, Detroit, is erecting a new hardware factory, two stories and basement, 100 x 120 ft.

Grant Brothers, 742 Woodward avenue, Detroit, have awarded a contract for the erection of a foundry building 50 x 154 ft.

The Detroit Shear Company, Detroit, has had plans prepared by Geo. W. Graves, architect, 56 Roland Building, for a two-story factory building 100 x 270 ft.

The Burroughs Adding Machine Company, Detroit, is erecting a new factory building 65 x 240 ft., four stories.

R. E. Raseman, architect, 1302 Penobscot Building, Detroit, is preparing plans for the erection of a large automobile manufacturing plant.

The Grann Logan Motor Company, Lima, Ohio, is having plans prepared by Albert Kahn & E. Wilby, architects, 800 Trussed Concrete Building, Detroit, for the erection of an automobile factory consisting of three buildings, 75 x 400 ft., 75 x 200 ft., 75 x 100 ft., two stories.

Milwaukee.

MILWAUKEE, WIS., April 19, 1910.

During the past week conditions here seem to have been practically reversed from what they were a short time ago. In general, the market has been rather dull, small orders being received by most manufacturers in considerably less volume than was generally the case for the first half of the month; but a number of large contracts were closed by the leading machinery houses and some of the latter represent the conclusion of negotiations that have been pending for more than a year. Buying on the part of iron and steel mills, municipalities and electric power companies, including traction lines, has been particularly heavy, the bulk of these orders originating with companies having large interests in the South and Southwest.

An interesting development in the line of pumping machinery, which for the past three or four months has been running mainly to gasoline engine or motor driven units, is that it has again turned in the direction of modern heavy duty engines, either compound or triple expansion, such as are built here by the Allis-Chalmers Company, Nordberg Mfg. Company and Fred M. Prescott Steam Pump Company, and at Corliss, Wis., by the Wisconsin Engine Company. Not only are municipalities again in the market for equipment of this class, but mines and mills throughout the metal producing districts of the country also seem to be in urgent need of largely increased pumping capacity. Some of the mining companies which temporarily abandoned work in their lower levels are opening these up again and extending them, with consequent necessity for dewatering, and the equipment previously in service no longer suffices.

Many, if not most, of the manufacturers in this section have been literally overwhelmed of late with orders for repair parts and spares of every description, so much so as to necessitate in some instances the subletting of work to smaller shops that make a specialty of it. Inquiries with regard to the rebuilding of machinery have also been liberal; but in the majority of cases these are turned down, as the cost of such work is usually beyond what the results would warrant. Considering the high prices now prevailing for second-hand apparatus of all kinds, it is ordinarily cheaper for users to sell what they have and repurchase machines of greater capacity or of increased efficiency than to attempt to make alterations with the same object in view.

Among the foundries of this State there is apparent a very general movement toward eliminating all hand labor in the handling of hot metal and castings, except for very small work, and many alterations in the interior construction of buildings, including the addition of tracks, monorail systems and crane runways where these have not heretofore existed, are now in progress. For a good many months Wisconsin and adjacent States will offer an excellent market for equipment of this character.

Hoists, elevators, conveyors, &c., are also needed more than ever before and at least one of the leading manufacturers of such apparatus has been making an extensive investigation of the needs of industrial plants in this direction. The field is one that offers opportunities for engineering skill of a high order and there have recently been worked out, within the writer's knowledge, some very ingenious methods of handling bulk material at considerable decrease in time and expense.

In this connection it is interesting to note that not a few suggestions of value in that line of work have been obtained in remote corners of the world, where construction and operating engineers have had to depend upon crude appliances in the solution of some very complicated problems. The manufacturer above mentioned has taken special pains to secure details of such contrivances used, with photographic views if possible, and they are yielding very profitable ideas. Issues of various trade journals are also carefully scanned with the same object. Very frequently an obscure reference will set this manufacturer upon the track of an idea of value and occasionally there is material in a descriptive article, written by some engineer on the ground, which has of itself sufficient suggestive value.

Through an error in copying, the address of the Gilson Foundry Company, whose contemplated removal to Kewaskum, Wis., was reported in *The Iron Age* of March 31, appeared as Port Washington, Wis., instead of West Bend, and was taken by the Gilson Mfg. Company of Port Washington, as referring to that company. The Gilson Foundry Company is, however, an entirely different concern. It was started some time ago at West Bend, Wis., by Phillip Gilson and sons, and, having outgrown its quarters there, has been offered inducements to remove to Kewaskum. The Gilson Mfg. Company has been long established at Port Washington and has a large plant there.

The installation of special centrifugal fire pumps, to be motor driven, is under consideration at Manitowoc, Wis. The plan is to place them on the lake from the docks of the Chicago & Northwestern Railway, which may purchase the pumps.

The new manufacturing plant to be erected by the Appleton Chair Company, Appleton, Wis., will include a power house 46 x 64 ft., and eight other buildings ranging in size from 34 x 46 ft., one story, to 58 x 112 ft., two stories. Construction bids are now being taken and equipment will be purchased later.

Arthur Schuetze, superintendent of the Manitowoc Church & School Supply Company, has resigned and will establish a woodworking plant of his own.

The new machine shop of the Kearney & Trecker Company at West Allis, Wis., is now being erected and the equipment will be installed within a few weeks. An electric generator has been ordered and electric drive will be provided for, shafting and belts having been used heretofore.

It is reported from Racine, Wis., that the Harvey Forging Company has begun work on a second addition to its plant which will increase the total dimensions to 50 x 150 ft., with installation of machine shop equipment of the most modern character.

The molding shop and annealing plant recently completed by the Beaver Dam Malleable Iron Company, Beaver Dam, Wis., are 150 x 350 ft. and 85 x 350 ft., respectively, with 12 annealing ovens.

The plant of the Wisconsin Foundry Company, Milwaukee, is about to be extended and improved, and a new building 80 x 130 ft. will be erected adjacent to the present foundry.

The large contract for a power, heating and lighting plant for county buildings at Elkhorn, Wis., referred to some weeks ago, has been awarded the Downey & Kruse Company, Milwaukee.

The Kerr-Murray Mfg. Company, Fort Wayne, Ind., will provide a new gas holder of 105,000 cu. ft. capacity, for the Sheboygan Gas Light Company, Sheboygan, Wis. It is to be of all steel construction. A similar unit, with accessory apparatus, will probably be required within the coming year.

The Merchants' Association, Appleton, Wis., is very active this spring in securing the location of new industries and aiding other local plants to enlarge their facilities. Recently a site has been provided for a factory to be erected by the Molle Typewriter Company and a building will be erected at once, the equipment usual to such an establishment, with power apparatus, being required.

The Northwestern Iron Company, Mayville, Wis., is adding somewhat to its electrical equipment, including motors.

The plant of K. F. Jacobson & Co., Racine, Wis., which makes a specialty of pattern work in both wood and metal, is being enlarged, and a two-story addition now under erection, according to report, will give the factory dimensions of 34 x 106 ft.

The National Brake & Electric Company, Milwaukee, has ordered the structural work of its new foundry from the American Bridge Company. The equipment to be installed will provide for making both steel and brass castings.

An unconfirmed dispatch from Minocqua, Wis., states that the plant of the Eagle Aluminum Company, including machinery, was bid in at an assignee's sale by Fred. W. Abele, whose address is given as Chicago, and that the industry will at once be revived. The plant mentioned is not a large one.

Besides the addition to its factory, recently noted in this report, the S. W. Miller Piano Company, Sheboygan, Wis., will build a separate power house, with possible need of new boilers, engine, &c.

The new factory to be erected by the Gardner Machine Company Beloit, Mich., will have nearly 30,000 sq. ft. of floor space, giving it greatly improved facilities, with the additional equipment to be installed, for manufacturing its line.

A Corliss engine of large capacity, with auxiliary apparatus, is being installed by the Schroeder Lumber Company at Ashland, Wis.

The Edgerton Wagon Company, Edgerton, Wis., a new incorporation, has determined upon the erection of a modern plant 50 x 200 ft., to be equipped with the best tools obtainable and probably motor driven.

The three new tubular boilers required at the North Point pumping station, Milwaukee, will be furnished by the Industrial Heating & Engineering Company of this city.

The Commercial Club, Evansville, Wis., is endeavoring to secure new plants for that city and the probability is that a canning factory will be erected there this summer, funds for the purpose having been raised.

Two 70-ton steam shovels, built by the Bucyrus Company, South Milwaukee, will be used for filling in bridges on the line of the Chicago, Milwaukee & Puget Sound Railway, and a number of others for railroad work are now under construction.

The Milwaukee Concrete Mixer & Machinery Company, W. J. Rosebery, manager, which was organized last winter, now has some of its machines out in operation, with very satisfactory results. This concern expects to be a large buyer of material, including steam and gasoline engines, motors, clutches, &c., the furnishing of some of which is already covered by contracts.

The Milwaukee Bridge Company, Milwaukee, has secured the contract for a steel bridge across the Vermillion River at Streator, Ill.

The Vulcan Iron & Steel Works, Milwaukee, has taken the largest contract for ornamental iron let in this part of the country for some time past. It will be used in the rebuilding of the State Capitol at Madison, Wis.

W. G. Hoffman, Merrill, Wis., is reported to contemplate installation of machinery at Bay City, Texas, for the manufacture of boxes and crates.

The Northwestern Engineering & Construction Company will start work shortly on the new line of the Rock River Traction Company, from Princeton, Ill., to Rock Island, Ill.

Contract for the erection of the three new shops to be added to the works of the Power & Mining Machinery Company, Cudahy, Wis., has been awarded The Worden-Allen Company, Milwaukee, and construction will begin at once.

The S. Freeman & Sons Mfg. Company, Racine, Wis., has found this season particularly favorable for the sale of boilers, both stationary and portable, as well as those used in marine service. This concern makes a specialty of internally fired corrugated furnace boilers in sizes up to 300 hp.

Bids are now being taken for the new machine shop which is to be erected by the E. B. Hayes Machine Company, Oshkosh, Wis.

A motor-driven blower for use in connection with the refuse disposal system of its new shop will be required shortly by the Mandt Wagon Company, Stoughton, Wis.

The Phoenix Mfg. Company, Eau Claire, Wis., will build a new foundry 100 x 200 ft. Some months ago a machine shop of similar dimensions was added to the company's works, but rapid increase in the business has now compelled further enlargement on which the company will expend about $75,000. During the past winter the company has given steady employment practically night and day to 150 men. Chief among its products, it is stated, have been logging engines and general iron work, but besides it has turned out a number of specialties, including car stake pockets, used for holding logs on cars and doing away with the chains. These pockets which can be opened with perfect safety by trainmen have stood the test, and as a result the company has had a rush of orders both from railroads and from lumber companies all over the country. The new building of the company will be of brick and steel.

Chas. J. Duer, New Richmond, Wis., who is now operating a machine shop, will erect a new building and install motors to operate the various tools.

The Dickson Malleable Iron Company, whose organization was referred to last week has given the Worden-Allen Company an order for the erection of the necessary buildings, the largest of which will be 500 ft. long. The location selected is in West Milwaukee.

The Linderman Machine Company, Muskegon, Mich., which has a large trade on this side of the lake, reports having received the largest order on record for jointing machines. Fifteen of its manufacture will be installed in the new plant of the Paine Lumber Company, at Oshkosh, Wis.

The Ashland Power Company, Ashland, Wis., will soon award a contract for hydroelectric equipment consisting of two 1000 kw. generators and water wheels to operate on a 135 ft. head, with transformers, towers, wire and necessary overhead material for a 35 mile high-tension transmission line from Brownstone Falls to Hurley, Wis.; Ironwood, Bessemer and Wakefield, Mich.

Foley, Welsh & Stewart, St. Paul, Minn., has secured a contract for the construction of an ore dock at Superior, Wis., for the Soo line, work upon which is to begin at once, with the expectation of having it ready for use by August. The total length of the structure which will be constructed of timber will be about 6000 ft. and it will be used for loading ore from the Cayuna range.

The Scott-Taylor Company, Ashland, Wis., will build a two-story addition to its planing mill, 50 x 50 ft., to make room for additional machinery.

The Central West.

OMAHA, NEB., April 18, 1910.

During the past week trade in shop, foundry and general industrial machinery has been without any features of importance other than those recently noted; but equipment used by contractors and in out of door work of every description is badly needed. For this condition the early advent of spring has been responsible. It caught dealers unprepared for the rush orders with which every season is opened, and some of them have had a lively time keeping up with the demand. Contracts placed last winter for April delivery are, however, being promptly filled, and the requirements of regular customers seem to be pretty well taken care of.

Miscellaneous buying on the part of railroads is steadily increasing, and the total figures for each week must foot up to quite a large amount. Improvements being made at junction points are especially noticeable. The electric lines are also helping materially to swell the volume of business originating with transportation companies. In fact, their percentage, as compared with steam roads, is abnormally heavy.

The Citizens' Light, Heat & Power Company, Eagle Grove, Iowa, is reported to have decided upon an addition to its plant which will increase the capacity to about 500 kw. Engine driven dynamos are now installed.

The installation of pumping machinery for water works service will be considered this summer at Carson, Iowa.

A large number of orders for governing apparatus to be applied to steam pumps have been received lately from all sections of the United States by the Fisher Governor Company, Marshalltown, Iowa, indicating something of the tremendous demand this spring for machinery used in handling water and other fluids.

Plans for a system of water distribution, including modern high duty pumps, have been ordered by the authorities at Fairbury, Neb., to be prepared.

Construction of a pumping plant for municipal service has been decided upon at George, Iowa.

From Havelock, Neb., it is reported that the Burlington road is preparing to erect car building and repair shops there.

An air compressor is being installed at the Bellevue-Hudson Mine, Georgetown, Colo.

At Aurora, Neb., it is proposed to use motors for driving pumps, and if the project is approved by popular vote the necessary machinery will be bought about June 15.

The Colorado Railway, Light & Power Company, Trinidad, Colo., has let contract for a steam turbine generating unit of 4000 kw., which will be furnished by the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., together with auxiliary equipment.

A modern high-duty pumping engine of 4,000,000 gal. capacity or over will be purchased this year for the water

works system at Lincoln, Neb. Tenders will be invited shortly.

Machinery for an electric power and lighting station to be operated by the city will be needed by fall at Kenesaw, Neb., and it may be bought within a month or two.

Installation of a horizontal steam turbine of 5000 hp., with alternating current generator of corresponding capacity, has been decided upon by the Omaha & Council Bluffs Street Railway Company, Omaha, Neb., and contracts covering the unit, with additional machinery made necessary by the present demands on its power plant, are understood locally to have already been closed.

The Standard Bridge Company, Omaha, Neb., has taken contract for three steel bridges to be erected in connection with a large drainage and reclamation project near Humboldt, Neb.

The Utah Ice & Storage Company, Salt Lake City, Utah, has purchased a tract of land 165 x 330 ft., on which it will erect within the next few months a plant to cost $200,000, the machinery for which has all been purchased.

The South.

NASHVILLE, TENN., April 18, 1910.

Trade conditions throughout the South continue satisfactory, and business in all lines is gradually being extended as the productive capacities of the metal working plants in this section increase. New equipment installed within the past few months has resulted in a greatly enlarged output; but it is all taken at good prices. Considerably more, in fact, could be sold by the same houses without special effort. Northern manufacturers' agencies have closed quite a number of important contracts lately, and various of these offices report a heavy run of small orders.

As additional power machinery is seldom purchased by industrial establishments until existing plants have been heavily overloaded, the extraordinary activity now prevailing in that line is one of the best indications of the present needs of Southern mines, mills, shops, factories and electric lighting and traction systems. At no previous period has the demand for engines, turbines, dynamos, transformers, motors, &c., been so considerable, and each power unit is, ordinarily, but one item in the list of operating machinery, tools and equipment required for some industrial operation.

In the operation of the extended works of the Tennessee Coal & Iron Company at Birmingham, Ala., much larger quantities of water will be required than heretofore, and the company will install two large pumping engines. These are to be of the vertical, cross compound, condensing, crank-and-fly wheel type, having steam sylinders 28 and 62 in. in diameter by 48 in. stroke; and, as the pumps are of the deep pit pattern, they will be placed 40 ft. below the engines in a well built for that purpose. The units will each have a normal capacity of 12,000,000 gal. daily when working against a 275 ft. head and capable of furnishing 25 per cent. more if required. The contract for these machines has just been placed with Northern builders.

A Worthington centrifugal pump of large capacity driven by a General Electric motor has been selected for service in the municipal water works at Petersburg, Va.

Additional foundry and shop facilities, including one or more new buildings, have been decided upon by the Interstate Roofing Company, Anniston, Ala.

The plant of the American Car & Foundry Company, at Memphis, Tenn., will be put to work at once on a large order for the account of the Mexican Central Railway, and others equally important are to follow.

The Prescott Company, Menominee, Mich., has furnished the machinery for a large new mill recently completed by the Morgan Lumber Company, Jacksonville, Fla., which is one of the most modern plants of its kind in the South.

The Mecklenburg Iron Works, Charlotte, N. C., is, in common with most of the metal working establishments in the Piedmont region, enjoying a large run of business.

Preparation of plans for water works to be operated by the city of Thomasville, N. C., has been entrusted to an engineering firm in Atlanta, Ga.

The Sloss-Sheffield Steel & Iron Company, Birmingham, Ala., has decided upon the installation of a horizontal steam turbine of 1000 hp., with alternating current dynamo of 750 kw., enclosed type, direct coupled. Exciter sets, switchboard, steam auxiliary apparatus and a number of large induction motors will be provided for at the same time. Contracts have practically been closed.

The city of Cordele, Ga., has decided upon the installation of a pumping unit of 2,000,000 gal. capacity in 24 hours.

The authorities at Jacksonville, Fla., are planning to build a new electric power plant and pumping station of a capacity considerably beyond that now in service; but the matter has not yet been definitely settled upon. A suitable site for the purpose was recently secured.

The Great Southern Lumber Company, which added a modern steam turbine power plant to the equipment of its mill at Bogalusa, La., consisting of machines to operate on the exhaust from reciprocating engines and drive electric generators, is purchasing quite a line of motors and other apparatus for use in extending the system of electric drive that has been introduced there. The company's main offices are at Harrisburg, Pa.

Machinery for a pumping plant and water works system will be purchased this spring at Titusville, Fla., as plans have been prepared and specifications are likely to be approved shortly.

It is stated at Birmingham, Ala., that the new shops which the Louisville & Nashville Railroad has been proposing to build there, including forge shop, boiler shop, machine shop and other buildings, with electric power plant, will be put in course of erection early next month, so as to have them operating by October or November.

The Wheland Machine Works, Chattanooga, Tenn., whose activity was recently noted in this report, has a large demand among Southern mills this season for its new type of edger, which is of all iron and steel construction.

The Soule Steam Feed Works, Meridian, Miss., is finding a good sale for its apparatus not only among Southern mills, but also in the North and Northwest, as far as British Columbia. This is a condition rather unusual for any metal working plant located so near the Gulf.

The Eustis Water, Light & Power Company, organized at Eustis, Fla., will install an engine-driven electric set of 200 hp., with exciter, dynamo, switchboard, &c., the required apparatus having practically been contracted for.

An elevated steel storage tank of 125,000 gal. capacity will be erected this summer at Crystal Springs, Miss., by the municipality. Bids are now being taken.

Additions will be made in the near future to the equipment of the municipal water works at Tarboro, N. C. The power plant and transformer station operated by the city may also be given increased capacity.

The Mathieson Alkali Works, Saltville, Va., whose headquarters are stated to be at Providence, R. I., will install an engine-driven power unit of 250 hp. to furnish alternating current for operating motors in and about the plant. Considerable auxiliary equipment will also be provided.

The municipality of Hartselle, Ala., will take bids for water works equipment in the near future. Xavier A. Cramer of Magnolia, Miss., is consulting engineer.

The Johnson Chair Company, Morristown, Tenn., will erect two buildings, 50 x 200 ft. Most of the equipment has been purchased.

The Northwest.

BUTTE, MONT., April 16, 1910.

A trip taken westward through the Dakotas and eastern Montana shows that the industrial activity manifested everywhere in this territory has not been overestimated in recent reports made to *The Iron Age* from Duluth and the Twin Cities, which were based largely on inquiries and orders received by supply houses. Observation and conversations had with dealers, traveling salesmen and others strengthen the impression previously gathered from correspondence that by fall of the present year machinery requirements in all parts of the Northwest will be extraordinarily large. In fact, they are already very considerable. Evidence confirmatory of this is found in the waybills of westbound freight, which one is occasionally privileged to examine at stations. Of course, at this season of the year agricultural machinery predominates, but the railroads are also carrying other equipment in great variety. West of the Dakota cities waybills carry mainly records of freight intended for the mines, crushers, concentrating plants, smelters, sawmills, &c., but as this list includes engines, hoists, compressors, shafting, belting, generators, motors and other apparatus of general utility, in addition to machinery peculiar to the principal industries of the country, the aggregate is still appreciably large. As a market for the sale of equipment and supplies, the Northwestern States are certainly developing at a very rapid rate.

From Watertown, S. D., it is reported, although without official authority, that the Minneapolis & St. Louis Railway Company will remove to that place the shop machinery now in service at Sioux Falls and provide a plant of increased capacity for car building and repair work.

Considerable additional equipment and supplies will be purchased this summer in connection with the Belle Fourche reclamation project.

An idea of the variety of apparatus now required in the equipment of a modern sawmill may be gained from the fact that the new plant of the Enterprise Lumber Company, Kila, near Kalispell, Mont., in addition to heavy sawmill machinery, engine, shafting, clutches, belting, conveyors, &c., includes an electric lighting outfit and a duplex pump of 1000-gal. per minute for fire protection purposes, with piping, valves, hydrants, hose, &c. If the machinery were motor driven a large dynamo, motors and controllers would be needed.

Steel barges for use on the Mississippi River are suffi-

ciently novel to justify comment on the fact that two of these craft are under construction for the Forest Products Company, Red Wing, Minn. If this practice is continued to any extent it will open up a new industry in the section using steel plate.

From Devils Lake, N. D., it is reported that a new pumping plant will be installed there during the summer.

As a result of its recent purchase by the Consumers' Power Company, the plant of the Mankato Gas & Electric Company, Mankato, Minn., will be enlarged and improved machinery installed. No definite announcement as to requirements has, however, as yet been made by the new owners.

Construction of a pumping plant and water works system will be undertaken this summer by the authorities at Washburn, N. D.

The first deep sinking electric hoist to be erected in the Butte district has just been put in service by the Butte Ballaklava Copper Company. It was built by the Lake Shore Machinery Company, Marquette, Mich., and is driven by a General Electric motor of 350 hp.

Operating machinery for the Zenith Furnace Company's new dock at West Duluth, Minn., will be furnished by Mead, Morrison & Co., Boston, Mass.

The Gold Chrome Mining Company, which has been operating a stamp mill on its property at Deborgia, Mont., has just placed an order for a wet grinding tube mill 5 ft. 6 in. x 22 ft., also a 240-hp. single horizontal reaction turbine which will utilize the power from a fall on the property. This turbine will drive the mill and a direct current generator which will supply lighting about the plant. The company's main office is in the Masonic Temple, Chicago, Ill.

One or more pumping units of moderate capacity will be needed for municipal water works to be constructed during the summer at Colton, S. D.

The Gamm & Porter Foundry Company, Minneapolis, Minn., has plans prepared and will commence work in the near future on the erection of a new foundry building.

Among structural contracts recently taken by the Minneapolis Steel & Machinery Company is one for the construction of a steel bridge at Thayer Junction, near Green River, Wyo.

The Schurmeier Wagon Company, St. Paul, Minn., has commenced the erection of a factory at that point, which will be equipped for the manufacture of motor trucks. The first building will be 50 x 150 ft. and the additional buildings will be constructed at as early a date as possible.

The Southwest.

KANSAS CITY, MO., April 18, 1910.

While there has been, within the past week, a great deal of scattered buying of machinery, few contracts of any size appear to have been closed; and reports received here from various parts of the Southwest are mainly in regard to orders which will not be placed until well along in May. Dealers, however, are busily engaged in fulfilling contracts previously taken, and plants in the different industrial centers still have about all they can do, so that any diminution of current business is not likely to be felt at this time.

New electric railroad building is the most prominent feature of the general field of equipment. Trackage in every Southwestern State will be at least doubled within a year. For most of the enterprises recently inaugurated the purchasing of machinery and supplies will be concluded before autumn, and prospects coming to the attention of manufacturers of such material should be followed up without delay. Not least among the requirements of new roads will be machine tools, motors, &c., for maintenance work, as shops devoted to that purpose are now embodied in the construction plans of practically every traction line projected through the Southwest. Companies out this way regard such facilities as an essential element of operating economy and provide for them in advance instead of waiting until after roads have been in operation for some time, as is generally done farther East.

The American Light & Water Company, whose main office is here, has recently taken orders for the construction and equipment of a number of water works, sewage and electric power plants in the Southwest, including a large contract to be executed for Silver City, N. M.

It is reported that equipment for a quarry and finishing plant will be installed this season by the Menten Granite Company, recently chartered at Oklahoma City, Okla., by Frank Menten, W. H. Gransden and others. The location of the industry is not given, but can be learned by addressing the Secretary of State.

The Dilley Foundry Company, Pine Bluff, Ark., has been filled with orders recently and will be obliged at the present rate to considerably enlarge its plant before long.

Darling Bros., Prescott, Ark., will require power, cutting and conveying machinery for a new mill to be erected in the vicinity of Ashdown, Ark.

The Board of Trade at Bogata, Texas, is offering inducements for the location there of a brick manufacturing plant.

R. S. Ellis, Steprock, Ark., is said to be in the market for a Corliss engine and other machinery.

The John F. Carl Piano Company, Battle Creek, Mich., has had plans drawn for a factory 60 x 750 ft., to be built at Oklahoma City, Okla.

The Miami Copper Company, Globe, Ariz., is erecting a machine shop of steel frame construction and will install a full line of tools for repair work. The equipment has already been contracted for. Additional power machinery is also being provided.

The Port Arthur Water Company, Port Arthur, Texas, which is operating an electric power station of 550-kw., will install a steam turbine, dynamo and other machinery, practically doubling its capacity, after building an addition to the station. Some of the output may be taken by a local traction line.

A hydroelectric plant of 4000 kw. will be constructed this year by the Pecos Development Company, recently organized, in which Merrill H. Fisher, Alamagordo, N. M., is actively interested. One or more turbines, governors, generators, exciter sets, transformers, switchboard and other appliances, together with pumping units to be operated by a subsidiary or independent company, will be required in due course. The plans, however, are not yet complete.

The Northern Texas Traction Company, Fort Worth, which has a power station at Handley, Texas, equipped with Allis-Chalmers and Westinghouse generators of about 3000 kw. combined capacity, will be compelled this summer to provide additional units and may install a steam turbine set. Plans for a new building are also understood to be in preparation.

A small pumping unit for water supply may be purchased this year by the authorities at Stafford, Ark., although definite action to that end has not yet been taken.

The Fort Smith Couch & Bedding Company, Fort Smith, Ark., is considering the erection of a new factory to cost about $10,000. The new factory will be equipped with individual motors.

The Scandland Mfg. Company, Wichita, Kan., recently incorporated, has secured a building which it will fit up for the manufacture of feed grinders.

The Modern Ice Machine Company, H. Zork, secretary, San Antonio, Texas, will establish a factory at that point for the manufacture of ice machines from ½ to 5 tons capacity.

The Sanitary Committee of the City Council of El Paso will install a pump to lift the sewage into the Rio Grande.

The Dean Mfg. Company is erecting large machine shops at Alpine, Texas, which will be operated in connection with its tank manufacturing works.

E. N. Phillips, San Marcos, Texas, contemplates erecting a cotton compress at Sinton, Texas. He is organizing a company for the purpose.

The Board of County Commissioners of Dallas County, Texas, will erect a new steel bridge to cost $90,000 at Miller's Ferry.

The San Angelo Water Works Company has increased its capital stock from $150,000 to $225,000. It will make extensions and improvements of its system at San Angelo, Texas.

The town of Crockett, Texas, will construct a system of water works. The water will be pumped from a well into a standpipe.

Mexican Notes.

The Durazno Mines Company, Alamos, Sonora, Mexico, will install a large air compressor outfit. The company's headquarters are stated to be in Pittsburgh, Pa.

A jaw crusher of standard design is required by the Cusi Mining Company, Estacion San Antonio, Chihuahua, Mexico.

From Mexico City it is reported that the Teziutlan Copper Mining & Smelting Company, Vergal, Oaxaca, Mexico, is interested in the construction of a hydroelectric plant of moderate capacity on the Sola River. Machinery builders who desire to get in touch with this proposition can probably do so to the best advantage through the federal authorities, which are maintaining a rigid control over all water power concessions. The address given in the report mentioned cannot be verified at this writing.

The Pacific Coast.

SAN FRANCISCO, CAL., April 13, 1910.

In some respects the machinery trade here has been a little slack, compared with what it was a few weeks ago, owing to delay in the execution of a number of important projects. Inquiries, however, seem to be liberal, and indications are that the second quarter of the year will show in the aggregate a much larger volume of business than the first. Buying for the account of mines, ore reduction plants, &c., including those as far east as the Utah mills and smelters, is

developing unusual proportions, and the calls from the oil fields are also heavy; so that the weekly average, despite the partial defection above noted, is steadily mounting. During the next six months or more there will be many additions made to metal working plants all up and down the Slope, further than those recently provided for, and among these forge shops are certain to be prominent, as there appears to be particular need of increased facilities along that line. Talk is also heard of the projected establishment at various points in this State or on the north coast of automobile shops to be operated as branches of well-known Eastern factories. When this is done the heavier parts can doubtless be manufactured to advantage here, and it will open up several new lines of industry. For the building of industrial trucks driven by gasoline motors the saving in freight rates, time of delivery, &c., to be effected would render such a scheme particularly advantageous, and these are coming so largely into use that their manufacture on the Coast ought now to be profitable for quite a number of concerns.

The Yakima Sash & Door Company, North Yakima, Wash., which was recently organized, expects to complete before fall a factory equipped with modern power and woodworking machinery, contracts for which will be let shortly.

The Oakland Stamp Mill Company, Oakland, Cal., is installing quite a number of its machines in California and Nevada plants, for many of which extensive improvements are now in progress.

The White Pine Sash Company, Spokane, Wash., has let contracts covering machinery, including a large line of alternating current motors.

The Orton Machine Company, San Francisco, which makes a specialty of equipment for woodworking plants, has had numerous inquiries recently from all parts of the Coast, and the bookings actually made are very satisfactory.

Another concern which does a large business in this line is the Ely Machinery Company, San Francisco. It also handles a combined stile and rail borer, manufactured by the E. B. Hayes Machine Company, Oshkosh, Wis., which possesses features of unusual interest.

The Los Angeles office of the Trent Engineering Company has been installed in the Union Trust Building.

The Victor Power & Mining Company, operating a property at Knob, Cal., near Redding, will install in the near future considerable machinery, including a crushing plant with ten stamp mills.

The Standard Gas Engine Company, Oakland, Cal., is putting out quite a number of its machines this season as prime movers for isolated lighting plants in connection with direct current generators of moderate capacity.

B. H. Harris, Medford, Ore., is manager of a timber company which will be in the market some time this year for power and sawmill machinery with which to equip a large new mill. It is intended to provide for cutting 100,000 ft. of lumber each working day.

A new steel burner for disposing of refuse has been installed for Small & Bucklin, New Westminster, B. C., together with some additional mill machinery.

The A. H. Averill Machinery Company, Portland, Ore., has succeeded during the past three months in placing a large number of automatic high speed engines at various points in Oregon and Washington, ranging in size from the 9 x 10 in. to 14 x 18 in. single valve machines, up to four-valve engines having cylinders 22 in. in diameter by 27 in. stroke.

Considerable improvement will be made in the equipment of the mill formerly operated by Gray & Co., Ellensburg, Wash., which has been purchased by the Cole Lumber Company, recently organized in Seattle, and which may be addressed in care of W. B. Cole of the P. C. Leonard Lumber Company of that place. Some of the new machinery required is understood to have been already contracted for, but more will be needed later.

Improved equipment will probably be required this year for the municipal pumping station at Modesto, Cal.

The Archer Blower & Pipe Company, Inc., Seattle, Wash., is meeting with a large demand for its double exhaust fans, driven by induction or direct current motors, which are used for refuse removal systems and other purposes.

Crane & Co.'s Portland office has taken the contract for iron piping, valves, &c., to be furnished the municipal water works, Forest Grove, Ore.

The Schaake Machine Works, New Westminster, B. C., has taken a large contract for machinery to be installed in a mill now being erected by Berkley Grieves at Comax, Vancouver Island, B. C.

Some tools for repair work will probably be needed this summer by the Riverside & Arlington Railway, Riverside, Cal., in connection with new car barns.

The machine shops of the Burpee & Letson Company, Bellingham, Wash., are rushed with orders at the present time, and there is every prospect of a busy season ahead.

Construction of water works to be operated by the city is under consideration at Orland, Cal.

According to an unconfirmed report from Oroville, Cal., the city will install a motor driven centrifugal pump, contract for which has been placed.

In last week's report *The Iron Age* was made to say that the Philbrick Cutter Head Company, Seattle, Wash., has disposed of a large output *of* woodworking plants. This should have read "to" woodworking plants.

The Union Tool Company, which makes a specialty of machinery and supplies for use in the oil fields, will add to its facilities a new machine shop 120 x 140 ft., to be erected in Los Angeles.

Extensive power equipment, including a steam turbine generating set of 300 to 400 kw., exciter units, switchboard, condenser, pumps and large alternating current motors, will be installed during the summer by the J. A. Veness Lumber Company, Winlock, Wash.

The Holton Power Company, Holton, Cal., is contemplating the installation of a steam power plant at El Centro, Cal., at a cost of about $75,000.

Government Purchases.

WASHINGTON, D. C., April 18, 1910.

Captain Fred H. Gallup, quartermaster U. S. Army, Fort Sam Houston, Texas, will receive proposals until April 28 for furnishing one crank shaper, one breast drill and one tool post grinder.

The Bureau of Supplies and Accounts, Navy Department, Washington, has issued schedule 2383, calling for bids to be opened May 10 for furnishing one rapid action motor driven punch, capable of punching a ½-in. hole through a ⅝-in. steel plate.

R. C. Hollyday, chief of Bureau of Yards and Docks, Navy Department, Washington, will open bids May 7 for condensers, fire pump, feed water heater and piping for the Navy Yard, Philadelphia, Pa.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids April 12 for the following:

Class 11.—One oxyacetylene welding and cutting plant—Bidder 27, Davis-Bournonville, New York, $5565; 51, Industrial Oxygen Company, New York, $3849.

Class 122.—One convertible steel plate fan—Bidder 28, Diehl Mfg. Company, Elizabethport, N. J., $731.90; 46, General Electric company, Schenectady, N. Y., $1081; 83, B. F. Sturtevant Company, Hyde Park, Mass., $775.

The United States Motor Company Will Also Make Commercial Vehicles.—Following the announcement that the United States Motor Company, 505 Fifth avenue, New York City, would take into its big selling organization concerns making pleasure vehicles selling from $500 to $5000, comes the statement that the Alden Sampson Mfg. Company, Pittsfield, Mass., maker of the Sampson commercial vehicles, has been taken into and is now a part of the organization. This means that the United States Motor Company will devote its interests to the commercial end of the industry as well as to the pleasure vehicle field. It is President Briscoe's intention to make a wide line of commercial vehicles, and the Alden Sampson plant at Pittsfield, Mass., will be enlarged with additional buildings, machinery and other equipment to the furtherance of this policy. After looking over various commercial vehicle propositions President Briscoe finally set upon the Alden Sampson vehicle as being the nearest to perfection of any on the market.

Tin in Nigeria, Africa.—At the annual meeting of the Nigerian Tin Corporation, Ltd., at London, March 4, 1910, Oliver Wethered, the chairman, stated that this company is interested in one of the most important virgin alluvial tin fields that the world has ever seen. It is situated in west central Africa, in the British sphere of influence. Development has heretofore been delayed by lack of means for economical transport. At present from 28 to 32 days are required to reach the tin fields, but even under this condition the cost of delivering tin at the coast is only about £45 per 2240 lb. The metal is of very high quality, commanding as a rule from £6 to £8 per ton more than Cornish tin. Completion of a projected railroad will lead to great reduction in the cost of production, and will enable the exploitation of the lode mines as well as the alluvial.

The Youngstown Car Mfg. Company, Youngstown, Ohio, is making shipments on a contract for 50 all steel mine cars for the Panama Coal Mining Company, Pittsburgh, with mines at Moundsville, W. Va.

A Large Wisconsin Billet Mill Engine.

The American Rolling Mill Company, Middletown, Ohio, will shortly install a heavy 48 x 60 in. Wisconsin Corliss engine to drive its billet mill. The engine is constructed throughout for severe service. It will have a 200,000-lb. flywheel located on the shaft, is built for a steam pressure of 150 lb. and is to run at a speed of 85 rev. per min. It is provided with a hollow forged steel piston rod with a tail crosshead support, so that the piston, which is made of open hearth cast steel will not come in contact with the cylinder. The valve gear is operated by double eccentrics and is of the long range type, so that the engine is capable of taking a very heavy overload. The frame is made in one piece and is of massive construction to stand the shocks from the mill.

The 24-in. billet mill, which is furnished by the United Engineering Foundry Company, Pittsburgh, is three-high and consists of two stands of rolls. It is of very heavy design. The engine is being built by the Wisconsin Engine Company, in its works at Corliss, Wis.

The Mesta Machine Company, Pittsburgh, has recently shipped a 96-in. Helander barometric condenser and a 14 and 34 x 24 in. dry air pump to the plant of the Jones & Laughlin Steel Company at Aliquippa, Pa.; a 36 x 1¼ in. plate shear with tables to the new plant being built at McKeesport, Pa., by the McKeesport Tin Plate Company; a 12 x 2 in. vertical bar shear and tables to the Berger Mfg. Company, Canton, Ohio, and two 43-in. and two 36-in. nickel steel machine molded roll pinions to the Tennessee Coal, Iron & Railroad Company for its blooming mill at Ensley, Ala.

CONTENTS.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:
1 to 1¾ in. round and square ... ₩ lb 1.90¢
1½ to 4 in. x ⅜ to 1 in. ... ₩ lb 1.90¢
1½ to 4 in. x ¼ to 5-16 ... ₩ lb 2.10¢
Rods—⅝ and 11-16 round and square ... ₩ lb 2.10¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.10¢
3 in. x 3-16 in. and ⅛ in.	2.35¢
1½ to 2½ in. x ⅛ in.	2.20¢
1½ to 2½ in. x 3-16 in. and thicker	2.10¢
1 to 1¼ in. x 3-16 in.	2.20¢
1 to 1¼ x ⅛ in.	2.30¢
⅝ x ⅛ in.	2.40¢
¾ x ⅛ in.	2.50¢
⅞ x ⅛ in.	3.55¢
⅛ x 3-32 in.	4.35¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2½ x 3-16 in.	2.35¢
3 in. and larger	2.15¢
Beams	2.10¢
Channels, 3 in. and larger	2.10¢
Bands—1½ to 6 x 3-16 to No. 8	2.35¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.90¢	3.00¢
Nos. 18 to 21	₩ lb 2.95¢	3.10¢
Nos. 22 and 24	₩ lb 3.05¢	3.25¢
No. 26	₩ lb 3.10¢	3.30¢
No. 28	₩ lb 3.20¢	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment ... ₩ lb 12 @14½
Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net

Galvanized.

Nos. 14 to 16 ... ₩ lb, 3.90¢
Nos. 22 to 24 ... ₩ lb, 3.55¢
No. 26 ... ₩ lb, 3.75¢
No. 28 ... ₩ lb, 4.10¢
No. 29 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—Galvanized.

Nos. 22 and 24 ... lb ₩ ..5.75¢
No. 26 ... ₩ lb ..6.25¢
No. 28 ... ₩ lb ..7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd.
No. 24 ... ₩ 100 sq. ft.	$3.85	4.80
No. 26 ... ₩ 100 sq. ft.	2.95	4.00
No. 28 ... ₩ 100 sq. ft.	2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)
"A. A. A." Charcoal:
IC, 14 x 20 ... $6.35
IX, 14 x 20 ... 7.00
A. Charcoal:
IC, 14 x 20 ... $5.40
IX, 14 x 20 ... 6.50

American Coke Plates—Bessemer—
IC, 14 x 20 ... 107 lb ... $4.40
IX, 14 x 20 ... 5.40

American Terne Plates—
IC, 20 x 28 with an 8 lb. coating ... $8.50
IX, 20 x 28 with an 8 lb. coating ... 10.50

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ x 6 and smaller ... 70&7½%
Larger and longer ... 65&5%
Common Carriage (rolled thread):
⅜ x 6, smaller and shorter ... 70& 12½%
Phila. Eagle, $3.00 list ... 80& 5@80& 10%
Bolt ends with C. & T. Nuts ... 65&5%
Machine (Cut Thread):
⅜ x 4 and smaller ... 70&12½%
Larger and longer ... 65&10%

Nuts

Blank or Tapped.

Cold Punched:	Off list.
Square	4.90¢
Hexagon	5.50¢
Square, C., T. & R	5.30¢
Hexagon, C., T. & R	6.10¢
Hot Pressed:	Off list.
Square	5.40¢
Hexagon	5.80¢

Seamless Brass Tubes—

List November 13, 1908. Base price 15¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 22¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14¾¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14¾¢ ₩ lb

Brass Wire—

List August 1, 1908. 14¾¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 14¾¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 19 ¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.
Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.
Planished Copper, 1¢ ₩ square foot more than Polished.

METALS—

Tin—

Straits Pig ... ₩ lb 34½@35¢

Copper—

Lake Ingot ... ₩ lb 14¾@15 ¢
Electrolytic ... ₩ lb 14¾@15 ¢
Casting ... ₩ lb 14¼@14½¢

Spelter—

Western ... ₩ lb 6½@6¾¢

Zinc.

No 9, base, casks ... ₩ lb 8¼¢ | Open ... ₩ lb 8¾¢

Lead.

American Pig ... ₩ lb 5¼@5¾¢
Bar ... ₩ lb 6¾@6¾¢

Solder.

½ & ½, guaranteed ... ₩ lb 22¼@22¾¢
No. 1 ... ₩ lb 18¾@19¼¢
Refined ... ₩ lb 17¼@17¾¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson ... ₩ lb ..@10¢
Hallette ... @10¢
Other Brands ... @9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting ... 34¢
Rods & Wire ... Base Price 31¢
Sheets ... Base Price 33¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut and crucible	₩ lb 11.00@11.25
Copper, Heavy and Wire	₩ lb 10.75@11.00
Copper, Light and Bottoms	₩ lb 9.75@10.00
Brass, Heavy	₩ lb 7.25@ 7.50
Brass, Light	₩ lb 6.00@ 6.25
Heavy Machine Composition	₩ lb 10.00@10.25
Clean Brass Turnings	₩ lb 7.00@ 7.25
Composition Turnings	₩ lb 8.25@ 8.50
Lead, Heavy	₩ lb ....@ 3.50
Lead, Tea	₩ lb .. .@ 3.25
Zinc Scrap	₩ lb ....@ 3.75